PROF. H. H. WING

New York
State College of Agriculture
At Cornell University
Ithaca, N. Y.

Library

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PROF. H.H. WING

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A
Book
of

Creamery and Cheese Factory Apparatus and Supplies

ILLUSTRATED

1902—1903

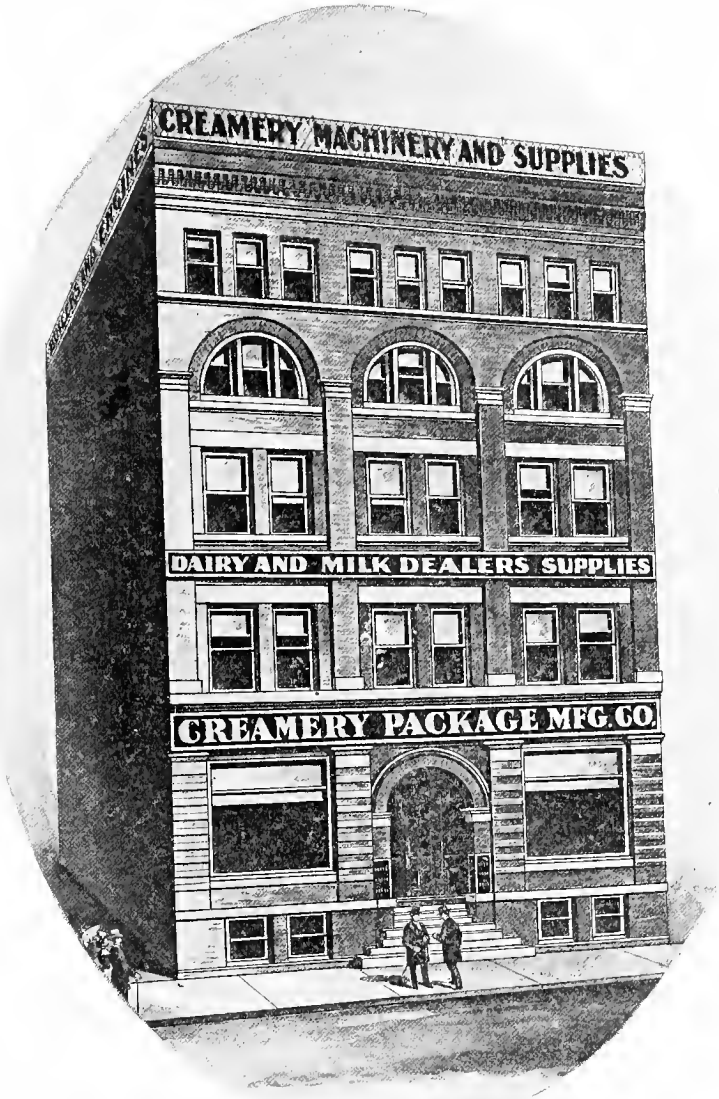
Creamery Package M'f'g. Co.
CHICAGO

Kansas City, Mo.
Waterloo, Iowa
Minneapolis, Minn.
Omaha, Neb.

MAIN OFFICE AND WAREHOUSE—1, 3 and 5 West Washington Street, Chicago, Ill.

BRANCH HOUSE, KANSAS CITY, MO.

BRANCH HOUSE, MINNEAPOLIS, MINN.



BRANCH HOUSE, WATERLOO, IOWA.

BRANCH HOUSE, OMAHA, NEB.

TO THE TRADE

It is with pleasure that we present our 1902-1903 Book. We take this opportunity of again making grateful acknowledgment of many favors from our customers. We believe this is the best catalogue we ever published. We have eliminated many goods, either because out of date or proven undesirable. We have added new lines for which we bespeak careful investigation.

Although we have not tried to illustrate or list everything that we manufacture and sell yet a complete line of Creamery, Cheese Factory and Dairy goods will be found. We are continually publishing small catalogues and price lists of specialties, which we are always glad to furnish for the asking.

We are manufacturing a larger line of our goods than ever before. Our shops are the best equipped and most complete of any in this line. Our Butter Package factories have largely increased facilities. Our mechanical specialties such as Disbrow Combined Churns, Ideal Skim Milk Weighers, Farrington Ripeners, Ideal Turbine Testers and Refrigerating Machines, are acknowledged as the standard machines in their respective lines.

We are constantly developing new apparatus for every possible requirement of the dairy industries. Each year is a year of growth and improvement with us. We are acknowledged to be the largest and most progressive Dairy Supply House in the world.

It is our earnest hope that this book will prove of value to our customers and that it may assist in the continuance of our past pleasant business relations.

NOTICE

All goods are delivered to the railroad and express companies in good order, and we cannot be responsible for their condition thereafter. **We would urge upon you the necessity of examining** all goods before receipting for same, and if damaged, note same on carrier's receipt. With these precautions taken, damages can be collected.

In ordering, always give **Full Name, Post Office Address, Railroad Station, County and State,** and whether to be shipped by **Freight, Express or Mail.** We will not be responsible for loss of goods ordered shipped by mail.

When persons ordering goods are unknown to us, or their rating is not given by the mercantile agencies, the order should be accompanied by cash or references as to financial standing. We cannot ship goods C. O. D. unless enough money is advanced on them to pay transportation charges both ways. In remitting, please do so by postal note, express order or draft on Chicago or New York.

RETURNED GOODS. We do not allow goods to be returned unless special arrangement is made relative thereto. We cannot assure our customers that their accounts will receive proper credit for returned goods unless the following instructions are strictly followed.

Goods must be marked plainly, both with our name and the shipper's.

On date of making shipment, we must be notified by mail regarding same, giving full list of goods returned, and stating in care of what transportation company shipment was made. If by freight, enclose shipping receipt.

All specifications and prices given herein are subject to change without notice. Write for our monthly price current or quotation.

TERMS

30 days, net cash; 1 per cent. discount in 10 days.

If ordering of us for first time, send us name of some one in this city with whom you are dealing.

Yours respectfully,

CREAMERY PACKAGE MANUFACTURING COMPANY.

BOILERS AND ENGINES

We are agents for the largest manufacturers of boilers and engines in this country.

In this Catalogue we aim to describe only such rigs as are adapted to creamery and dairy work.

Our engines are built from entire new patterns, with the latest improvements. Special attention has been paid to make all parts plain, simple, strong and durable; all the wearing surfaces are unusually large. The *Material* throughout is the best, and they are well made with the latest improved machinery, thereby securing accuracy and durability. The *Frames* are strong and well shaped. All the *Cylinders* have *Hot Air Jackets*, which decrease the condensation in the cylinders. The arrangement of the *Steam Chest* and *Steam Ports* is such that all the water forming in the cylinders is readily carried off, the *Ports* extending below the bottom of cylinders; and the heaters being still lower, a perfect drainage is secured. The *Pumps* are large and simple, firmly secured to cylinders and unable to get out of alignment; they are provided with large *Air Chambers* and *Brass Valves* and *Seats*, which can be readily taken out and replaced while the engine is working at full speed. The *Center Cranks* are large and made of solid forgings, and are not liable to break. The *Pistons* are fitted with self-adjusting steam packing rings, and do not require any attention, nor do they cut the cylinders; they are a great improvement over any other kind of packing. The *Connecting Rods* are of the most substantial character—of wrought iron, with straps, bolts and keys to take up the wear of the brass boxes. The *Governors* regulate the speed of the engines perfectly; they are provided with "speeders" to change the speed of the engines while in motion, and also with a hand lever attachment to the valve, which is convenient for controlling the speed of the engines when a uniform speed is not wanted, as when sawing, for instance. The *General Design* of our engines is neat and compact.

The boilers are all made from the *VERY BEST* 60,000 lb. tensile strength *Steel*, and are thoroughly tested before leaving the shop. The specifications are, as you will note, very liberal.

We carry the largest stock of these goods of any *Dairy Supply House* in this country, and our facilities for handling them are of the best.

If you do not find what you want herein, write, giving description of what you require, and we will quote you.

RULES FOR FIREMEN

ON THE CARE AND MANAGEMENT OF STEAM BOILERS

1. **Height of Water.**—Inspect carefully the amount of water in Boiler. Don't rely upon Water Gauge, as it becomes stopped up; but try Gauge Cocks and see that there is at least 2½ inches of water over flues or crown sheets. Don't unbank fire or renew fuel until you are satisfied with the amount of water in Boiler.

2. **Low Water.**—When water is found below the Gauge Cocks, DON'T turn on the feed, and don't tamper with nor open the Safety Valve. Let the Feed, Safety Valve and steam outlets remain as they are. Cover the fire over with ashes or fresh coal (slack, if handy), or in case of firing with wood *withdraw* the fire and swing open the fire doors.

3. **In Cases of Foaming.**—Close Throttle and keep closed long enough to show true level of water. If that level is sufficiently high, feeding and blowing will usually suffice to correct the evil. In cases of violent foaming, caused by dirty water, or change from salt to fresh, or *vice versa*, in addition to the action above stated, check draft and cover fires with fresh coal.

4. **Safety Valve.**—Never put any additional weights on Safety Valve lever. See that it corresponds in blowing off with pressure indicated by Steam Gauge. Inspect frequently by raising the lever cautiously, as the valves may become stuck to seats and useless for the purpose intended.

5. **Feeding.**—Never feed the Boiler with cold water, but use some good form of heater. Not only is considerable fuel saved by this, but repairs to Boiler also. NEVER FEED in the front end of a boiler (unless the pipe is carried well through to the rear end). If fed through the front end lime and other impurities are precipitated on the sheets over the fire, making them liable to bulge, sag, leak and crack.

6. **Leaks and Blisters.**—As soon as found, they should be properly repaired.

7. **Blowing Off.**—Blow off at least once in two weeks, every Saturday night would be better. In case the feed water is muddy, blow down a few inches *every day. Boilers should never be blown out while hot*, as the walls, plates, flues and braces retain sufficient heat to bake the deposits of mud into a hard scale that becomes firmly attached to their surface, and with the outer walls and bridge wall hot there is danger of injury to the plates in the boiler. The boiler and walls should always be allowed to cool down before water is run out; the deposit of mud and scale will then be quite soft, and can be easily washed out with a hose from all accessible places. Many engineers suppose that blowing out a boiler under pressure has a tendency to remove these deposits from a boiler, but experience has shown this to be a very grave mistake.

8. **Removing Deposit and Sediment.**—In tubular Boilers the man-hole should be often opened, and all collections removed from over the fire. (For extracting lime and other impurities, see our "Phospho" and Heaters.)

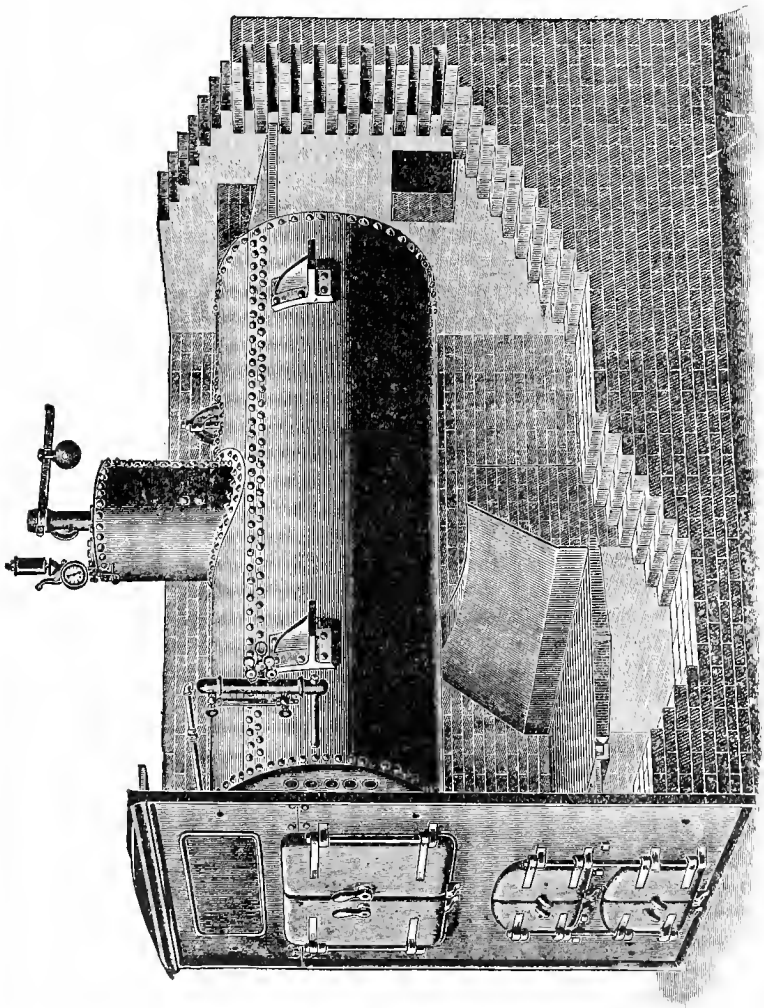
9. **Mud Drums.**—Inspect carefully and as often as you do the Boiler. Remove the man-head and clean out. Mud Drums are frequently the source of accidents, as they are liable to give out before the Boiler does, and are often placed in inaccessible places where they are overlooked.

10. **Firing.**—In firing with coal, keep your grates covered with a thin fire. Fire often and not too much at a time. If too fast in steaming, close dampers and shut off draft.

11. **Cleanliness.**—It is important that the sheets of the Boiler and all fittings, particularly the Feed, be kept clean and free. Tubes, Flues, Smoke Connection and Boiler Room should be well swept.

STATIONARY TUBULAR STEEL BOILERS

With Full Arch Front

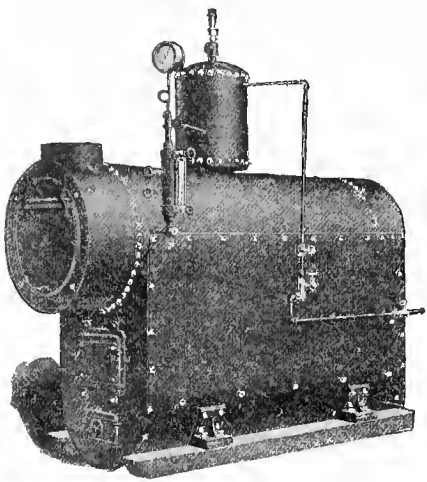


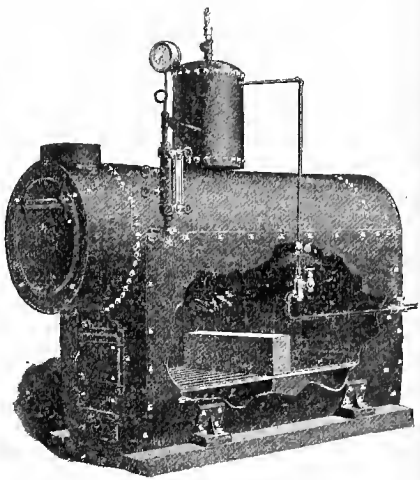
IDEAL ECONOMIST BOILER.

This Boiler is well adapted to work requiring moderate power in a small compass. It is also designed for all places where a Boiler of a semi-portable nature is required or where brick is scarce and masonry work expensive.

It is a Horizontal Return Tubular Boiler set in a wrought iron casing. This casing is protected from the fire by a fire-brick lining. The fire is built under the Boiler, the heat passing along the bottom of the Boiler and returning through the tubes to the smoke box in front. The bridge wall is adjustable to different lengths of fuel. The price is low. It is safe, durable, easy cleaned and a rapid, economical steamer.

Largely used in Creameries, Grain Elevators, Brick Yards, Cotton Mills and small manufacturing plants generally.





SPECIFICATIONS OF ECONOMIZER BOILER

Furnished with or without Detachable Dome.

TELEGRAPHIC CIPHER.	Cloth	Woolen	Linen	Cambric	Gingham	Calico	Cotton	Muslin
Horse Power Rating	4	5	6	7	8	10	12	15
Diameter of shell, inches	26	26	26	30	30	30	30	30
Length of tubes, feet	3	4	5	5	6	7	8	10
No. of 3-inch tubes	15	15	15	22	22	22	22	22
Thickness of shell, inches	¼	¼	¼	¼	¼	¼	¼	¼
Thickness of heads	5-16	5-16	5-16	5-16	5-16	5-16	5-16	5-16
Length grates, inches	24	24	24	24	30	30	30	36
Width grates, inches	20	20	20	24	24	24	24	24
Size pop safety valve, inches	¾	¾	1	1	1¼	1½	1½	1½
Size blow-off valve, inches	¾	¾	1	1	1	1	1	1
No. of fire-brick or tile lining	10	12	14	14	16	18	20	24
Size of fire-brick or tile lining	12x22	12x22	12x22	12x24	12x24	12x24	12x24	12x24
Weight of fire-brick or tile lining	500	600	700	800	900	1025	1150	1350
Length of stack, feet	20	20	20	24	24	24	24	24
Diameter of stack, inches	12	12	12	14	14	14	14	14
Approximate weight, complete	2000	2550	2875	3200	3700	4000	4500	5000

WITH THESE BOILERS THE FOLLOWING FIXTURES AND FITTINGS ARE FURNISHED:

Smoke box extension, door and stack saddle, grate bars, bearing bars, bridge wall, fire-brick lining, pop safety valve, steam gauge and syphon, water column with glass water gauge, 2 gauge cocks; feed, check and blow-off valves; injector fitted to boiler, whistle and valve, smoke stack and guys four times length of stack. Detachable domes enable convenient loading in box cars, as well as economy in freight charges.

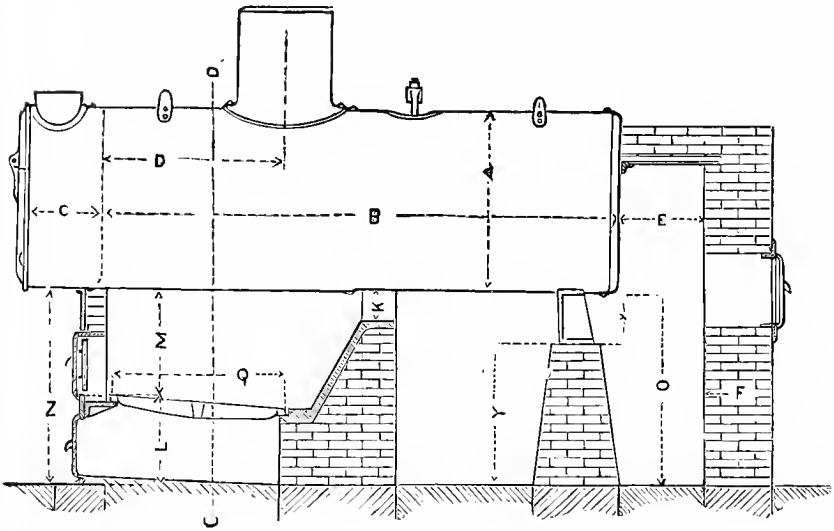
PRICES NAMED ON APPLICATION.

STATIONARY TUBULAR STEEL BOILERS

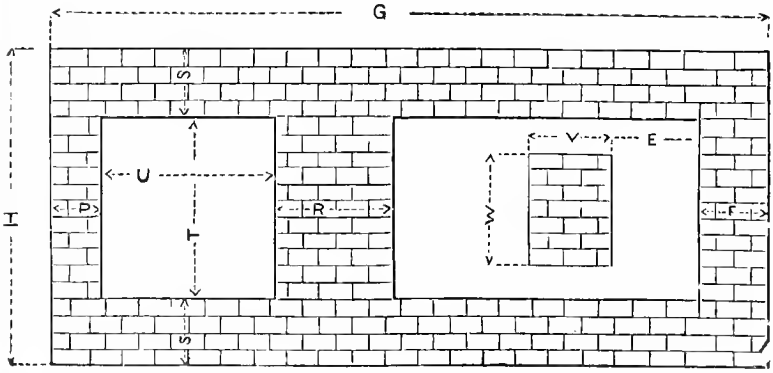
PLANS FOR SETTING

Half Arch Front

LONGITUDINAL SECTIONAL ELEVATION



GROUND PLAN

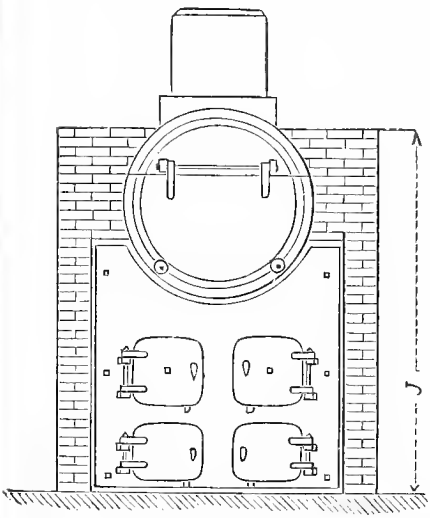


STATIONARY TUBULAR STEEL BOILERS

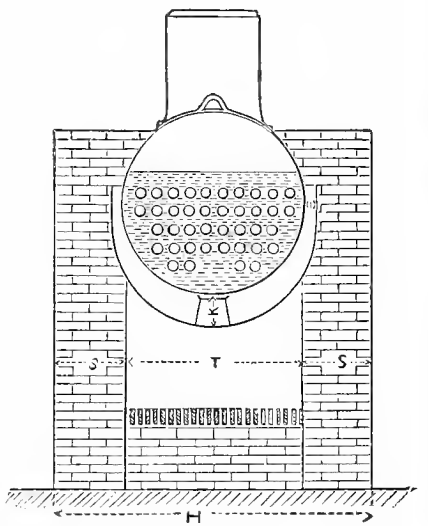
PLANS FOR SETTING

With Half Arch Front

FRONT ELEVATION



SECTION ON LINE "C D"



MEASUREMENTS FOR SETTING

Half Arch Fronts

FOR REFERENCE LETTERS, SEE PRECEDING DIAGRAMS

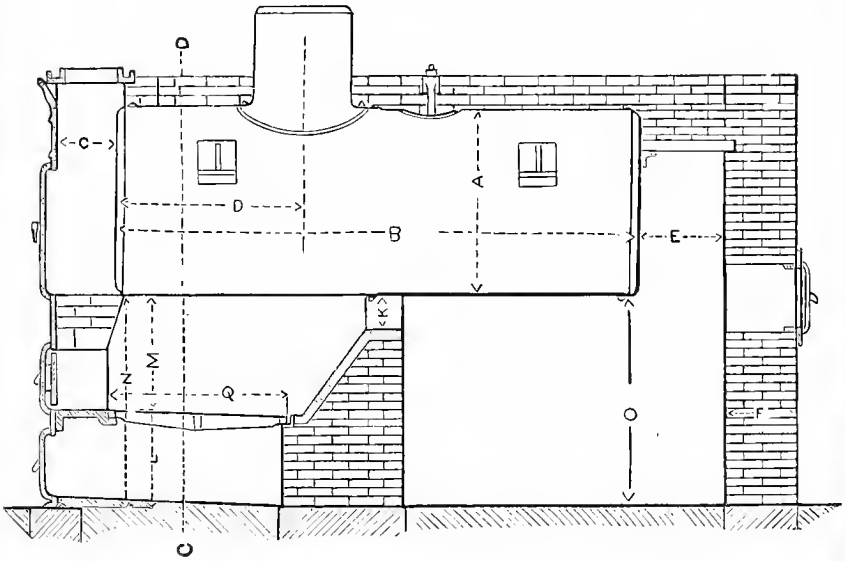
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	No. of Fire Brick.	No. of Com. Brick Above Floor Level.
Ins.	Ft.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.		
30	8	14½	24	18	16	134	62	4	68	8	22	21	43	42¼	12	36	20	16	30	33	12	24	10	32¼	250	6150
36	7	16	16	20	16	124	68	4	75	8	21½	22½	44	43½	12	36	20	16	36	33	12	24	10	33½	250	5700
36	8	16	22	20	16	136	68	4	75	8	21½	22½	44	43¼	12	36	20	16	36	33	12	24	10	33½	260	6260
36	10	16	30	20	16	160	68	4	75	8	21½	22½	44	43	12	42	20	16	36	39	12	24	10	33	290	7090
42	8	20	19½	20	16	136	74	4	82	8	23	22½	45½	44¼	12	36	24	16	42	33	12	28	10	34¼	300	7450
42	10	20	30	20	16	160	74	4	82	8	23	22½	45½	44½	12	42	24	16	42	39	12	28	10	34½	320	7770
44	10	20	30	20	16	160	76	4	84	8	23	22½	45½	44½	12	42	24	16	44	39	12	28	10	34½	330	8330
44	12	22	39	20	16	184	76	4	84	8	23	22½	45½	44½	12	48	24	16	44	45	12	28	10	34½	360	9260
44	14	21½	54	20	16	208	76	4	84	8	23	22½	45½	44½	12	54	24	16	44	51	12	28	10	34½	395	10195
48	12	23	36	20	16	184	80	4	93	8	25	24¾	49¾	48¼	12	48	28	16	48	45	20	32	10	38¼	455	11155
48	14	23	50	20	16	208	80	4	93	8	25	24¾	49¾	48¼	12	54	28	16	48	51	20	32	10	38¼	475	11675
48	16	23½	84	20	16	232	80	4	93	8	25	24¾	49¾	48½	12	54	28	16	48	51	20	32	10	38¼	495	12195
54	12	23¾	36	20	16	186	86	4	100	8	25½	26	51½	50½	16	48	32	16	54	43	20	36	10	40½	1100	11800
54	14	23¾	50	20	16	210	86	4	100	8	25½	26	51½	50½	16	54	32	16	54	45	20	36	10	40½	1160	12300
54	15	23¾	60	20	16	222	86	4	100	8	25½	26	51½	50	16	54	32	16	54	45	20	36	10	40	1220	12800
54	16	23¾	84	20	16	234	86	4	100	8	25½	26	51½	50	16	54	32	16	54	45	20	36	10	40	1280	13300
60	12	23¾	36	20	16	186	92	4	106	10	25½	26	51½	50½	16	48	32	16	60	43	20	40	10	40½	1200	12400
60	14	23¾	50	20	16	210	92	4	106	10	25½	26	51½	50½	16	54	32	16	60	45	20	40	10	40½	1260	13200
60	15	23¾	60	20	16	222	92	4	106	10	25½	26	51½	50	16	54	32	16	60	45	20	40	10	40	1320	14000
60	16	23¾	84	20	16	234	92	4	106	10	25½	26	51½	50	16	54	32	16	60	45	20	40	10	40	1380	14800
66	14	23¾	48	20	20	216	106	4	112	12	25½	26	51½	50½	20	54	32	20	66	47	24	48	7	43½	1400	19000
66	15	23¾	60	20	20	228	106	4	112	12	25½	26	51½	50	20	54	32	20	66	47	24	48	7	43	1460	20000
66	16	23¾	84	20	20	240	106	4	112	12	25½	26	51½	50	20	54	32	20	66	47	24	48	7	43	1520	21000
66	18	23¾	84	20	20	264	106	4	112	12	26	26	51½	50	20	60	32	20	66	53	24	48	7	43	1580	22000
72	14	23½	48	20	20	216	112	4	118	12	26	26	52	51	20	54	32	20	72	47	24	54	7	44	1600	20300
72	15	23½	60	20	20	228	112	4	118	12	26	26	52	50½	20	54	32	20	72	47	24	54	7	43½	1660	21400
72	16	23½	84	20	20	240	112	4	118	12	26	26	52	50½	20	54	32	20	72	47	24	54	7	43½	1720	22500
72	18	23¾	84	20	20	264	112	4	118	12	26	26	52	50½	20	60	32	20	72	53	24	54	7	43½	1780	23600

STATIONARY TUBULAR STEEL BOILERS

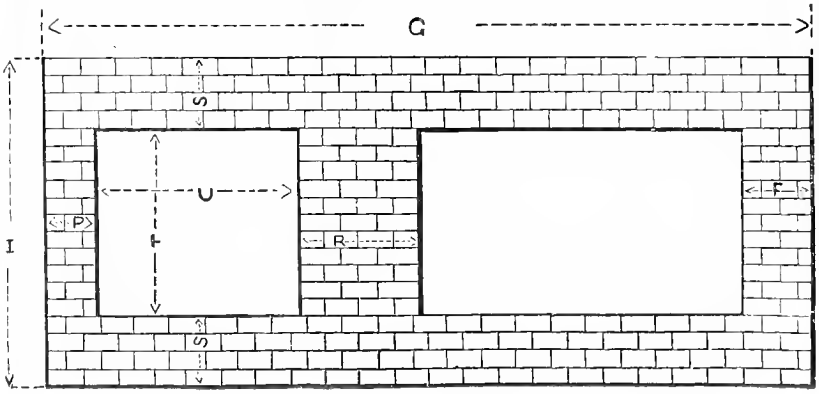
PLANS FOR SETTING

Full Arch Front

LONGITUDINAL SECTIONAL ELEVATION



GROUND PLAN

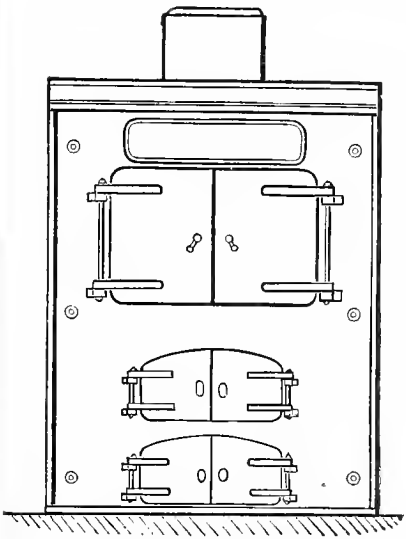


STATIONARY TUBULAR STEEL BOILERS

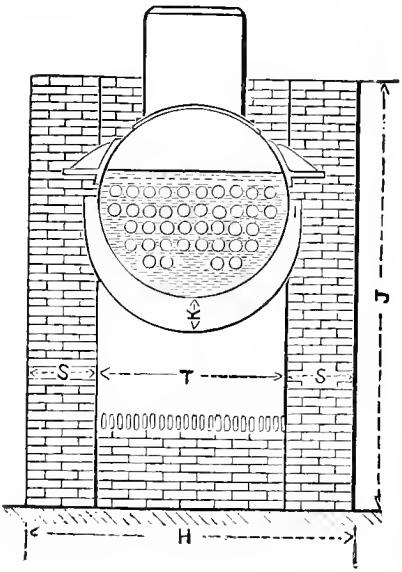
PLANS FOR SETTING

With Full Arch Front

FRONT ELEVATION



SECTION ON LINE "C D"



MEASUREMENTS FOR SETTING

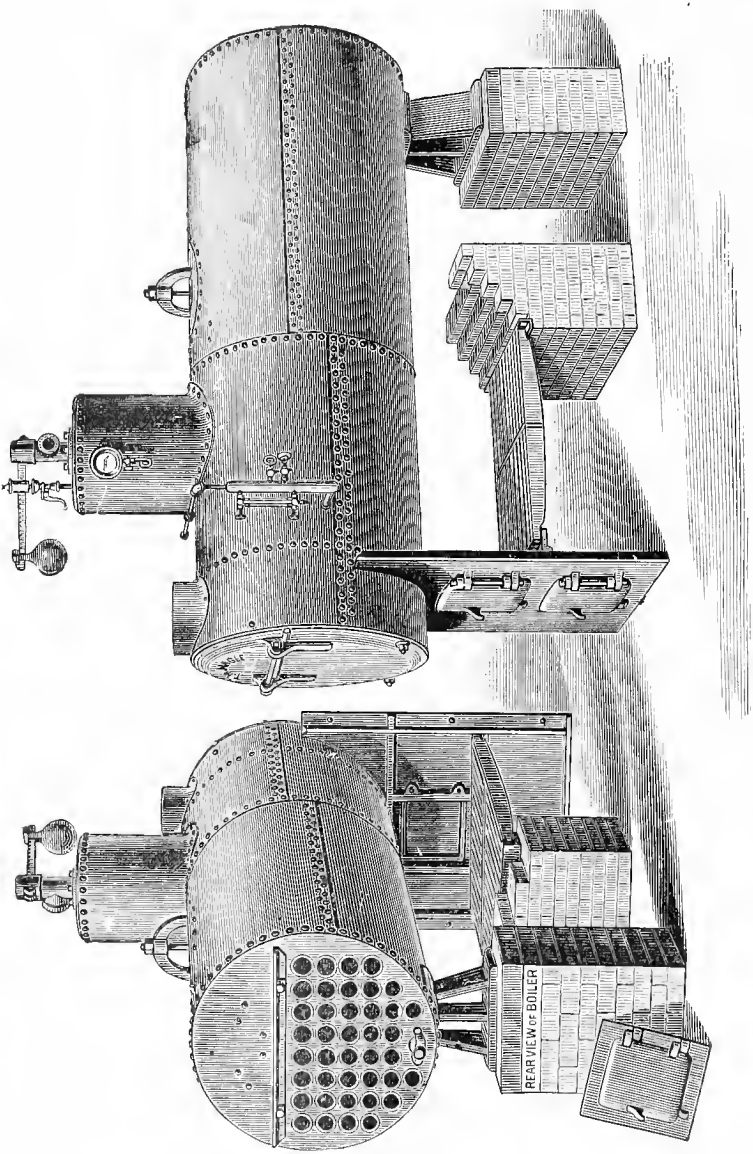
Full Arch Fronts

FOR REFERENCE LETTERS, SEE PRECEDING DIAGRAMS.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	No. of Fire Brick.	No. of Com. Brick Above Floor Level.
Ins.	Ft.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.		
30	8	12	24	18	16	148	62	4	82	8	18	17	35	34	12	36	20	16	30	39	250	6450
36	7	12	16	20	16	138	68	4	88	8	18	17	35	34	12	36	20	16	36	39	250	6550
36	8	12	22	20	16	150	68	4	88	8	18	17	35	34	12	36	20	16	36	39	260	6960
36	10	12	30	20	16	174	68	4	88	8	18	17	35	34	12	36	20	16	36	45	290	7790
42	8	14	19½	20	16	152	74	4	102½	8	18	17	35	34	12	36	24	16	42	41	300	8300
42	10	14	30	20	16	176	74	4	102½	8	18	17	35	34	12	42	24	16	42	47	320	9120
44	10	14	30	20	16	176	76	4	104½	8	25½	27	52½	51½	12	42	24	16	44	47	330	10230
44	12	14	39	20	16	200	76	4	104½	8	25½	27	52½	51½	12	48	24	16	44	53	363	11063
44	14	14	54	20	16	224	76	4	104½	8	25½	27	52½	51½	12	54	24	16	44	59	395	11995
48	12	16	36	20	16	202	80	4	108	8	25	27	52	51	12	48	28	16	48	53	455	11755
48	14	16	50	20	16	226	80	4	108	8	25	27	52	51	12	54	28	16	48	59	475	12775
48	16	16	48	20	16	250	80	4	108	8	25	27	52	50½	12	54	28	16	48	59	495	13795
54	12	16	36	20	16	202	94	4	114½	8	25½	28	53½	52½	12	48	32	20	54	53	1100	14600
54	14	16	50	20	16	226	94	4	114½	8	25½	28	53½	52½	12	54	32	20	54	59	1160	16000
54	15	16	60	20	16	238	94	4	114½	8	25½	28	53½	52	12	54	32	20	54	59	1220	16700
54	16	16	84	20	16	250	94	4	114½	10	25½	28	53½	52	12	54	32	20	54	59	1280	17600
60	12	18	36	20	16	206	100	4	121	10	25	28	53	52	12	48	32	20	60	51	1200	16000
60	14	18	50	20	16	230	100	4	121	10	25	28	53	52	16	54	32	20	60	57	1260	17400
60	15	18	60	20	16	242	100	4	121	10	25	28	53	51½	16	54	32	20	60	57	1320	18400
60	16	18	84	20	16	254	100	4	121	10	25	28	53	51½	16	54	32	20	60	57	1380	19200
66	14	20	48	20	20	236	114	4	131	12	29	28	57	56	16	54	32	24	66	57	1400	24000
66	15	20	60	20	20	248	114	4	131	12	29	28	57	55½	16	54	32	24	66	57	1460	25000
66	16	20	84	20	20	260	114	4	131	12	29	28	57	55½	16	54	32	24	66	57	1520	26000
66	18	20	84	20	20	284	114	4	131	12	29	28	57	55½	16	60	32	24	66	63	1580	28000
72	14	20	48	20	20	236	120	4	134	12	26	28	54	53	16	54	32	24	72	57	1600	25000
72	15	20	60	20	20	248	120	4	134	12	26	28	54	52½	16	54	32	24	72	57	1660	26500
72	16	20	84	20	20	260	120	4	134	12	26	28	54	52½	16	54	32	24	72	57	1720	28000
72	18	20	84	20	20	284	120	4	134	12	26	28	54	52½	16	60	32	24	72	63	1780	31000

STATIONARY TUBULAR STEEL BOILERS

With Half Arch Front



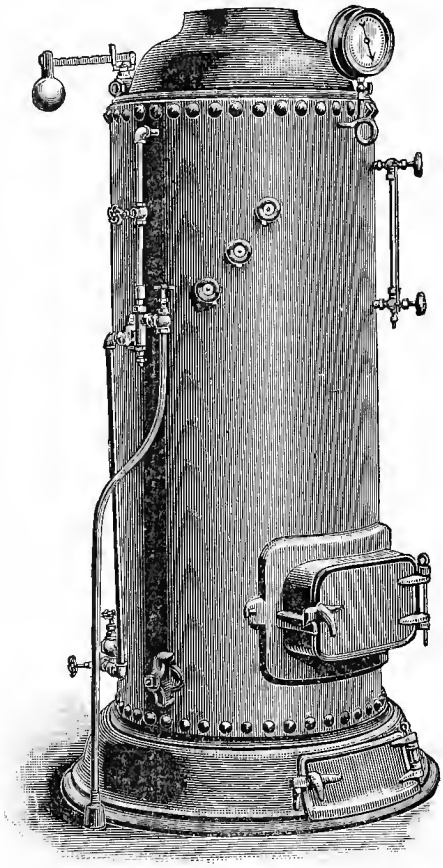
SPECIFICATIONS OF STATIONARY TUBULAR STEEL BOILERS.

NUMBER OF SIZE	1	2	3	3½	4	5	6	7	7½	8	9	10	11	12	13
Name or Cipher by which to designate	*Locust*	*Maple*	*Oak*	*Willow*	*Poplar*	*Fig*	*Pine*	*Palm*	*Birch*	*Spruce*	*Walnut*	*Sycamore*	*Peach*	*Plum*	*Apple*
HORSE POWER	**10**	**12**	**15**	**20**	**25**	**25**	**30**	**35**	**40**	**45**	**50**	**60**	**70**	**80**	**100**
DIAMETER OF BOILER...in inches	**30**	**30**	**36**	**36**	**36**	**42**	**44**	**44**	**44**	**48**	**48**	**54**	**54**	**60**	**66**
Length of Flues.....in feet	7	8	8	10	12	10	10	12	14	14	15	15	16	16	16
Number of Flues (3 inches in diameter)..	20	20	22	26	26	38	44	44	44	48	48	60	44-3½"	48-4"	58-4"
Square Feet of Heating Surface.....	130	160	191	270	300	380	445	510	560	642	702	846	96	1109	1359
Diameter of Dome.....in inches	16	16	20	20	20	22	22	22	22	26	26	30	30	32	32
Height of Dome ..... "	18	18	22	22	22	24	24	24	24	28	28	34	34	36	36
Thickness of Steel in Shell of Boiler....	¼	¼	¼	¼	¼	9-32	9-32	9-32	9-32	5-16	5-16	5-16	5-16	11-32	⅜
Thickness of Heads.....	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	7-16	7-16	7-16	7-16	7-16	1 2
Diameter of Smoke Stack.....in inches	14	14	16	16	20	20	20	20	20	22	22	26	26	28	30
Length of Smoke Stack.....in feet	24	24	24	24	24	35	35	40	40	50	50	50	50	60	60
Weight of Boiler and Britchen....about	1950	2250	2500	3000	3350	3830	4200	4700	5500	5900	7400	8300	11,000	12,000	14,600
Weight of Boiler Fixtures.....about	1250	1500	1550	1800	2050	2290	2400	2600	2955	3250	3450	3900	4000	4500	5400
Weight of Boiler and Fixtures.....about	3200	3750	4050	4800	5400	6120	6600	7300	8425	9150	10,850	12,200	15,000	16,500	20,000

Boiler fixtures comprise the Arch Front with Liners for Fire Brick, Grates, Grate Bearers, Boiler Stand, Rear Arch Bars, Ash Door and Frame for rear end of Arch, Safety Valve, Steam Gauge, Water Gauge fitted with Stand Pipe, Gauge Cocks, Whistle and Pipe, Blow-off Valve, Check Valve, Stop Valve, Smoke Stack, and Guy Wires (four times the length of stack). Grates for Boilers having 7 ft. and 8ft. tubes are 36 ins. long; with 10 ft. tubes, 42 ins; with 12 ft. tubes, 48 ins; and with 14, 15, and 16 ft. tubes, 54 ins. long, and the width of the Grates in all cases equals the diameter of the Boiler. Sawdust Grates will be substituted for regular Grates when ordered, without extra charge. All Smoke Stacks are made of No. 16 iron. If heavier is required add for No. 14 twenty-five per cent., and for No.12 seventy- five per cent. Boilers 42 inches and over in diameter are made with man-hole in shell, as shown in cut. Boilers less than 42 ins. diameter are made without man-holes, except to order, at additional cost. All Boilers 10 feet and shorter have a hand-hole in front head under tubes. Boilers with tubes longer than 10 feet have hand-holes in both front and rear heads. Heavy cast-iron Wall Brackets will be furnished when so ordered, at an additional cost. Single door fronts furnished unless otherwise specified.

UPRIGHT TUBULAR STEEL BOILERS

From 1½ to 16 Horse Power



FOR SPECIFICATIONS SEE PAGE 21

Upright Boilers and Engines furnished on combination base without extra charge.

WRITE FOR PRICES

Specifications of Plain Upright Steel Boilers

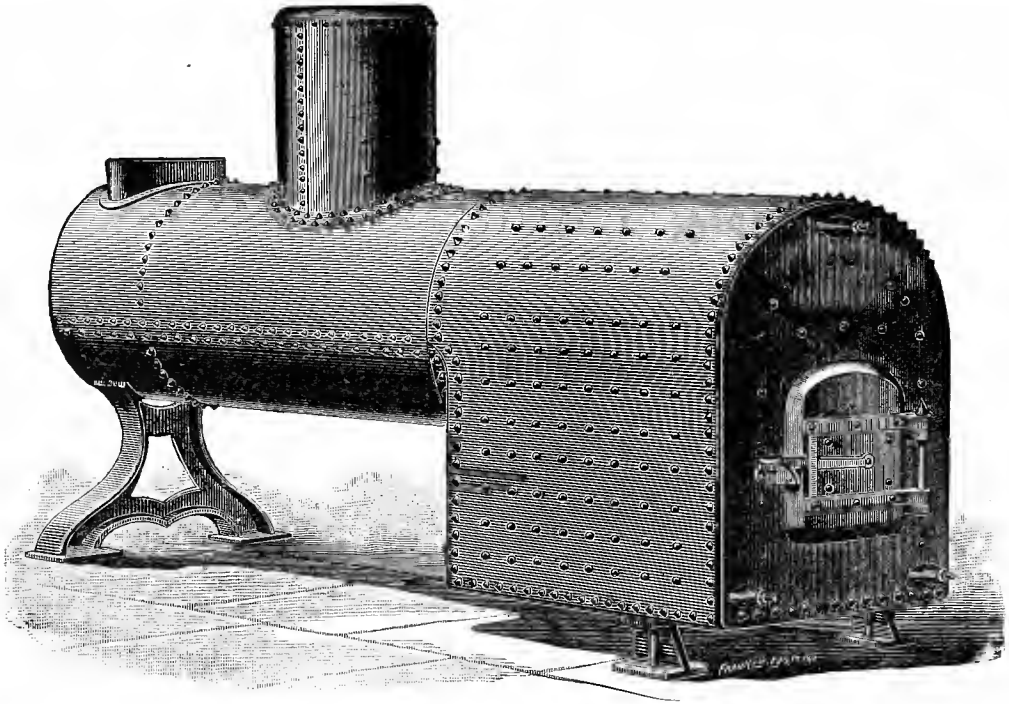
HORSE POWER	1½	2	3	4	5	6	8	10	12	14	16
Telegraphic Cipher	Red	Green	Yellow	Blue	Indigo	Violet	White	Black	Orange	Maroon	Purple
Diameter of boiler, in inches	20	20	20	24	24	26	30	30	36	36	36
Height above base, in inches	36	43	49	50	60	60	60	72	72	84	96
Diameter of furnace, in inches	16	16	16	21	21	22	25	25	30	30	30
Height of furnace, in inches	18	18	18	18	18	22	24	24	24	28	32
Thickness of steel in shell, in inches	3/16	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Thickness of steel in heads, in inches	1/4	5/16	5/16	5/16	5/16	5/16	5/16	3/8	3/8	3/8	3/8
Thickness of steel in fire box, in inches	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	5/16	5/16	5/16
Length of tubes, in inches	18	25	31	32	40	38	36	48	48	56	64
Number of 2 inch tubes	16	19	19	31	31	37	43	40	55	55	55
Weight of boiler without trimmings or fixtures	325	430	530	640	750	840	1010	1180	1520	1800	2280
Weight of boiler, complete	475	560	620	890	1060	1300	1550	1650	2350	2540	3000
Outside diameter of stack opening, in inches	8½	8½	8½	10	10	11	12½	12½	12¾	12¾	12¾
Height from floor to top of hood, in inches	50	54	60	66	76	76	76	94	98	108	120

CAST FIXTURES.—Base, hood, fire door and grates.

TRIMMINGS.—Injector fitted, steam gauge, water gauge, gauge cocks, safety valve, blow-off, check and stop valves.

All Boilers above 26 inches in diameter have vertical seams double riveted. They are made of flange 60,000 lbs. Tensile Strength Steel and are tested to 160 lbs. hydraulic pressure.

Portable or Locomotive Boilers



With Water Front and Open Bottom Fire Boxes, mounted on Skids. Built in 18 sizes, from 6 to 100 Horse Power. Specifications on the following page.

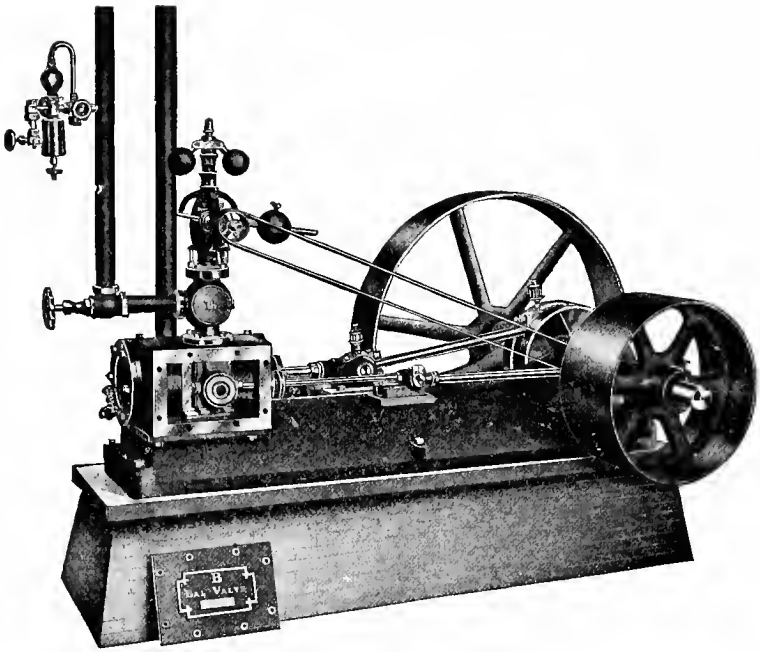
Specifications of Portable or Locomotive Boilers

THOROUGHLY BRACED AND STAYED AND TESTED TO 150 POUNDS HYDROSTATIC PRESSURE.

Size Number	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Cipher	Cal	Cow	Cart	Cave	Cram	Cake	Can	Cabin	Cage	Camp	Child	Coat	Cob	Coin	Cream	Crow	Cue	Carl
Horse Power (Nominal Rating)	6	8	10	12	15	20	25	30	35	40	45	50	60	70	75	80	90	100
Diameter of Boiler in inches	26	28	30	32	32	34	36	40	44	44	48	48	52	52	56	56	60	60
Length of Fire-box " "	36	36	36	36	42	50	52	52	60	60	60	60	60	60	63	63	66	66
Width of Fire-box " "	22	23	24	26	26	28	30	34	38	38	42	42	46	46	50	50	54	54
Height of Fire-box " "	26	30	31	33	33	36	38	42	48	50	52	52	54	54	56	56	60	60
Number of 3-inch Tubes	14	18	20	22	24	30	34	38	46	46	48	48	64	64	76	76	76	85
Length of Tubes in inches	54	60	66	72	84	96	96	102	96	114	114	132	126	144	132	144	168	180
Thickness of Steel in Shell, inches	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{9}{32}$	$\frac{9}{32}$	$\frac{9}{32}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{11}{32}$	$\frac{11}{32}$	$\frac{3}{8}$	$\frac{3}{8}$
Thickness of Steel in Fire-box, inches	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$
Thickness of Steel in Heads "	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{7}{16}$
Diameter of Dome "	13	14	15	16	16	16	18	20	22	22	24	24	28	28	28	28	32	32
Height of Dome "	14	15	16	16	16	16	20	22	24	24	24	24	26	26	26	26	32	32
Square Feet of Heating Surface	75	100	124	147	177	235	280	316	361	416	464	547	627	705	766	825	953	1138
Diameter of Smoke Stack in inches	12	13	14	15	15	16	18	20	22	22	24	24	26	26	28	28	28	30
Length of Smoke Stack in feet	18	18	20	20	24	28	28	30	28	32	32	38	36	42	38	42	50	52
Estimated Weight with fixtures	2800	3300	3800	4300	4800	5400	6400	7800	9000	9600	10800	11500	12500	13000	15000	16000	19000	20000

With hand holes in suitable places; also one man hole in shell of Boilers of 45 Horse Power and larger. All Boilers are mounted on skids unless otherwise ordered, in which case a proportionate amount will be deducted from price if skids are not wanted. Longitudinal seams on all Boilers 30 Horse Power and smaller are single riveted. On all larger sizes they are double riveted. All domes on Boilers 35 Horse Power and larger are double riveted to the shell. The following list of fixtures and fittings are furnished with these Boilers: Grate Bars with bearers, Safety Valve, Steam Gauge and Siphon, Glass Water Gauge, Gauge Cocks, Whistle, Blow-off, Check and Stop Valve, Smoke Stack with galvanized iron guys four times the length of stack. Anything else ordered will be charged for extra.

THE VICTOR ENGINE



CENTER CRANK STYLE.

This Engine is of beautiful design—heavy, yet of systematical construction and well proportioned throughout. The workmanship is first-class. It is built with full bed, which is much better than the overhanging cylinder, thus insuring perfect alignment. It has a balanced valve of our own design, and as a result of the perfect balance of this valve the friction load of the engine is reduced to a minimum, effecting a saving of fuel.

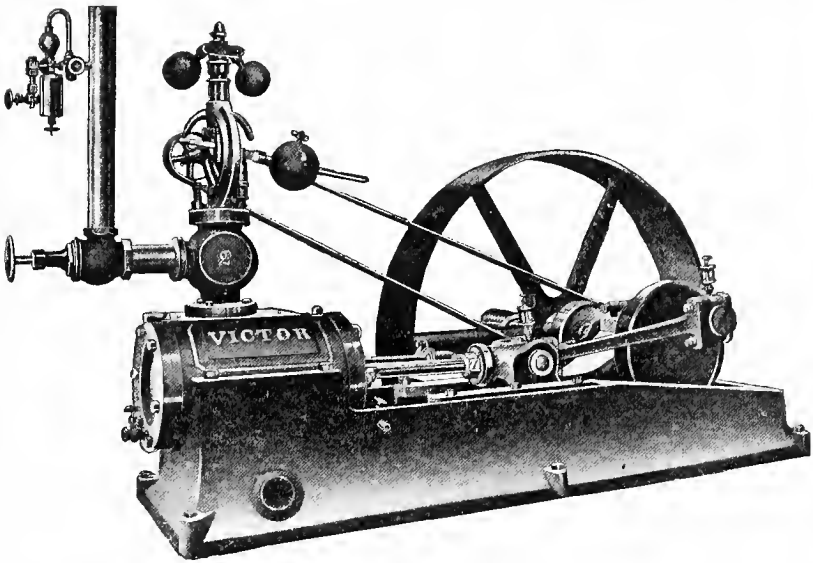
All parts are made in duplicate. The crank is made from solid forgings, slotted out, with no welds or joints to give out. The reciprocating parts are fully balanced by neatly finished crank disc balances. The main rod is a solid steel forging equipped with brasses so constructed that two large bolts pass through both halves of the brasses, also through the ends of the rods, thereby making it practically a solid rod from end to end, with this advantage, that the brasses can be taken up to overcome wear on them and the pins. There are no set screws or keys to work loose, as the bolts holding the brasses to the rods are securely fastened with lock nuts.

The connecting, piston, eccentric and valve rods are made of finished steel and with all necessary adjustments.

The arrangement of the chest parts and exhaust is such that perfect drainage is secured.

The cylinder is hot air jacketed. The cross head is of our own design and one of the distinctive features of the Victor Engine. It is a well known fact that all of the wear on crosshead pins comes on the sides, causing them to wear flat. Ours is so constructed that the pins can very easily be turned from time to time

THE VICTOR ENGINE



SIDE CRANK STYLE.

to equalize the wear; both the pin and rod brasses give the best results from this construction. The crosshead ways are made with wide bearings and are adjustable.

The bed is so cast and finished as to provide an oil well for both cross head and valve guide block, thus insuring perfect lubrication.

The fly wheels are heavier than those ordinarily used, and enable the engine to pass the center freely and retain an even speed.

We guarantee indicated horse-power. Every engine is tapped so that a card can be taken from it any time it is desired to do so. Before shipment every engine is tested under steam.

FIXTURES—Governor, Governor Belt, Throttle Valve, Set Oil Cups, Belt Pulleys, Fly Wheel, Sight Feed Lubricator, Cylinder and Air Bibbs.

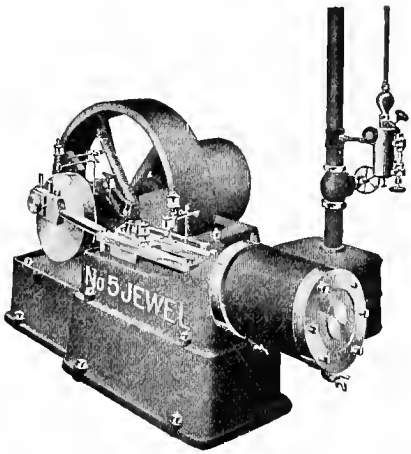
SPECIFICATIONS OF VICTOR ENGINES

LIST OF THE SIZES OF VICTOR FIXTURES.

Size	AA	A	B	C	D
Code Word	SMOKE	SMOLDER	SMOTHER	SMUT	SNAG
Horse Power	6	8	10	12	15
Steam Pipe	1¼"	1¼"	1½"	1½"	2"
Exhaust Pipe	1½"	1½"	2"	2"	2½"
Diameter Shaft	2"	2¼"	2½"	2 15/16"	2 15/16"
Revolutions	230	220	200	200	200
Fly Wheel	36"x6"	36"x6"	40"x8"	44"x8"	48"x8"
Belt Wheel	16x8	16x8	20x10	20x10	20x10
Length of Shaft	42"	42"	50"	50"	50"
Length of Engine Bed	4' 8"	4' 8"	5' 8"	5' 8"	5' 8"
Width of Bed	13-½	13-½	14	17	17
Weight	1100	1200	1440	1700	1800

THE "JEWEL" SIDE CRANK ENGINE

SUPERIOR FINISH



RITES AUTOMATIC GOVERNOR

This engine has been used in creameries for a long time. It is considered to be one of the best engines for plants of this kind built. The present Jewel is better than ever before, as it is now fitted with the Rites Automatic Governor which keeps the engine under perfect control at all times.

DIMENSIONS AND POWERS OF THE
"JEWEL" AUTOMATIC CUT-OFF ENGINES
Based on 80 lbs. Initial Pressure, Cut-Off at ¼ Stroke

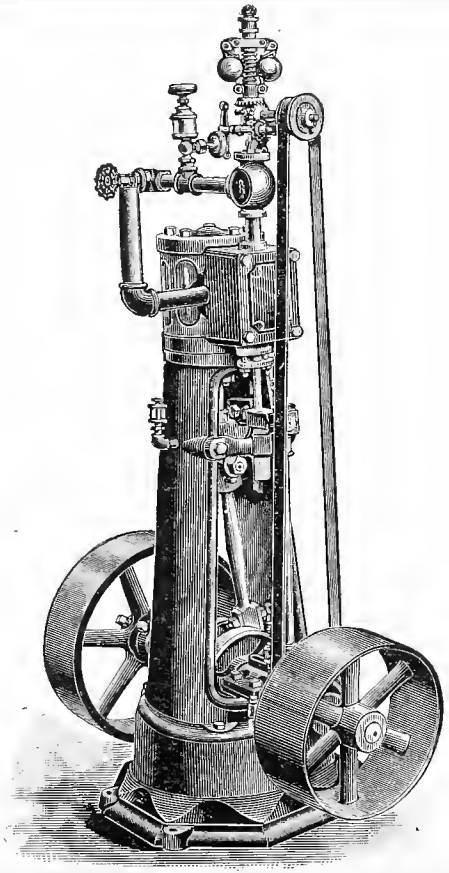
ENGINE NUMBER	1	2	3	4	5	6
Telegraphic Cipher	Diamond	Ruby	Emerald	Pearl	Opal	Garnet
Horse Power Rating	6 to 8	8 to 10	10 to 12	15 to 18	20 to 25	30 to 35
Revolutions per Minute	AT 260 / AT 380	AT 230 / AT 320	AT 230 / AT 300	AT 220 / AT 280	AT 220 / AT 260	AT 220 / AT 260
Cylinder Bore	4½ in.	5 in.	6 in.	7½ in.	8 in.	9¼ in.
Cylinder Stroke	6 in.	7½ in.	7½ in.	8 in.	10 in.	10 in.
Steam Pipe	1¼ in.	1¼ in.	1½ in.	2 in.	2 in.	2 in.
Exhaust Pipe	1½ in.	1½ in.	2 in.	2½ in.	2½ in.	2½ in.
Fly Wheel Diameter	20 in.	30 in.	30 in.	35 in.	42 in.	42 in.
Fly Wheel Face	5½ in.	6¾ in.	6¾ in.	7½ in.	9¾ in.	9¾ in.
Fly Wheel Weight	135 lbs.	200 lbs.	340 lbs.	435 lbs.	660 lbs	660 lbs.
Belt Pulley Diameter	14 in.	16 in.	18 in.	20 in.	20 in.	24 in.
Belt Pulley Face	6½ in.	7½ in.	8½ in.	10½ in.	12 in.	12 in.
Diameter of Shaft	1 5/16 in.	2¼ in.	2¼ in.	2⅜ in.	3½ in.	3½ in.
Floor Space	52x36	64x38	64x38	69½x46½	73x54	73x54
Weight complete	700 lbs.	1050 lbs.	1275 lbs.	1850 lbs.	2850 lbs.	2950 lbs.

TRIMMINGS.—We ship with each engine a complete set of glass oilers, one sight-feed lubricator, one throttle valve and two cylinder cocks.

SPEED.—We have found that the best results can be obtained between the limits of speed specified in the above list, although a greater or less number of revolutions may be used if desired.

The governor will be adjusted to the higher number of revolutions unless the speed desired is specified in the order.

WRITE FOR ESTIMATES.



DIMENSIONS OF UPRIGHT ENGINES

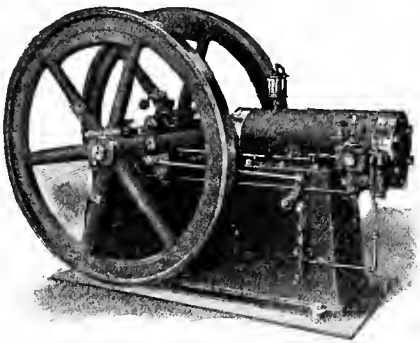
RATED HORSE POWER	1	2	4	6	8	10	12	15
Telegraphic Cipher.....	Celery	Carrot	Parsnip	Cabbage	Squash	Lettuce	Beans	Peas
Cylinder { Bore.....	2½	3	4	5	6	7½	7½	7½
Cylinder { Stroke.....	3	5	5	7½	7½	8	9	10
Steam Pipe.....	⅜	½	¾	1	1¼	1½	1½	1½
Exhaust Pipe.....	½	¾	[illegible]	1¼	1½	2	2	2
Revolutions per Minute...	400	350	300	250	200	200	180	180
Belt Pulley { Diameter....	6	10	12	14	14	16	18	18
Belt Pulley { Face.....	3¼	4½	5	6½	6½	7½	8½	8½
Governor Pulley { Diam..	3	4	4⅝	5⅝	6⅛	9	9	9
Governor Pulley { Face...	1¼	1½	1½	1¾	1¾	2	2	2
Floor Space, inches.....	14x26	18x20	18x20	20x22	20x22	22x24	22x24	22x24
Height to top of Cylinder.	30 in.	3 ft. 6 in.	3 ft. 6 in.	4 ft. 8 in.	4 ft. 10 in.	5 ft. 2 in.	.....	.....
Weight.....	170	275	425	700	850	1250	1400	1500
Balance Wheel { Diam....	13	15	17	24	24	30	30	35
Balance Wheel { Face.....	3½	4	4½	6	6	6¾	6¾	7¼
Balance Wheel { Weight..	35	45	65	170	170	180	180	350
Diameter of Shaft.....	1⅛	1½	1½	1 15-16	1 15-16	2⅜	2⅜	2⅜

TRIMMINGS.—The above prices include governor, governor pulley and belt, throttle valve, oil cups, cylinder lubricator, belt wheel, balance wheel and air cock.

Upright Boilers and Engines furnished on combination base without extra charge.

WRITE FOR ESTIMATES.

THE "WHITE" GASOLINE ENGINE.



6 H. P.—Alternating Principle.

(One Impulse every second revolution.)

SIZE OF PULLEY—

Diameter	16 inches
Face	10 inches
Floor Space	42x63 inches
Weight	2,000 pounds
Shipping Weight	2,300 pounds
Speed	275 revolutions

The illustration shows a typical White Horizontal Gasoline Engine. The particular size photographed is of 6 H. P. capacity; but it may be regarded as representing the range of manufacture, running from 4 H. P. to 20 H. P. All engines of the horizontal type are built upon the four-period principle, having an impulse every alternate revolution.

The method of operation of the White Gasoline Engine of the stationary type is as follows:

On the forward stroke of the piston a charge of air and gasoline is drawn into the cylinder. On the return stroke this charge is compressed and ignited at the proper point by an electric spark from the battery, expanding forcibly and driving the piston forward. On the return stroke the piston expels the burnt gases from the cylinder. The succeeding forward stroke again draws a charge of air and gasoline into the cylinder, and the operation is repeated.

If the use of power be irregular, it frequently skips for one or more revolutions, as the admission of air and gasoline to the cylinder and the operation of the igniter are under the control of the governor, which opens the valve for admitting the charge only when necessary. This prevents "racing," or very high speed, in cases when the load is suddenly taken off.

Our patent igniter used in the stationary type of White Gasoline Engine, possesses a number of advantages over the ordinary electric igniter in common use. It acts only when the point is drawn in, and its points do not become battered out of shape between charges, while the engine is running. It does not become coated with grease, carbon or scale. It is always reliable, producing a spark of the same size,

whether the engine be running slow or fast, also making it absolutely sure to start the engine at the first turn of the wheel.

Our patent system of supplying gasoline to the cylinder makes it impossible for the gasoline to leak into or out of the engine.

In the sale of each horizontal engine the equipment included is as follows:

One Engine, complete, with compression grease cups and lubricator.

One Electric Battery, complete, in box, with a knife-switch and wire to connect with the engine.

One Muffler, to reduce the noise of the exhaust.

One Driving Pulley, two wrenches and one squirt oil can.

One Water Tank for cooling the water which circulates about the cylinder to keep down its temperature. Also all pipes to connect the engine with the tank up to 15 feet.

One Gasoline Tank, of 55 gallons capacity (or smaller, if desired). Also such small pipe as is necessary to connect the engine and tank, not exceeding 20 feet.

One length of Exhaust Pipe, suitable for each engine.

Foundation Bolts, proper size and length for engine.

Samples of hard oil and cylinder oil.

Every engine is securely boxed, packed and delivered on board cars.

"WHITE" STATIONARY GASOLINE ENGINE.

Dimensions and Sizes:

Actual Horse Power	Indicated Horse Power	Revolutions Per Minute	Size of Pulleys	Size of Base	Approximate Shipping Weight
			Inches	Inches	Lbs.
1½	2¼	440	6 x 3½	34 x 16	630
2½	3	340	10 x 5	24 x 48	900
3	4	400	10 x 6	20 x 43	800
4	5½	275	12 x 8	19 x 38	1650
5	....	....	.....	.....	....
6	8	260	16 x 10	20 x 47	2300
7	....	....	.....	.....	....
8	9½	250	18 x 12	21 x 52	2600
9	....	....	.....	.....	....
10	12½	240	24 x 12	24 x 61	3750
11	....	....	.....	.... ..	....
12	15	230	24 x 12	24 x 61	3950
13	....	....	.....	.....	....
16	18½	220	28 x 14	24 x 65	4700
20	23	210	28 x 14	24 x 65	5000

With each engine except 1½ and 3 horse power, we furnish without additional charge, an Edison-La Lande electric battery of seven cells, to supply the spark for the igniter. We can also furnish the Carlisle & Finch sparking dynamo for the same purpose, at an additional cost of $14.00. The 1½ and 3 horse power equipped with dynamos only.

The pulleys are made with straight face to receive a belt of half the width, designed to run on tight and loose pulleys on driving shaft. We can furnish clutch pulleys, if desired, to take the place of tight and loose pulleys on the driving shaft, at moderate additional cost.

A substantial cast iron base is furnished for all our engines, of sufficient thickness to permit the fly-wheels to clear the floor. This gives a better foundation than either stone or brick, as it can never settle out of alignment, and it saves expense to the purchaser. (See cuts.)

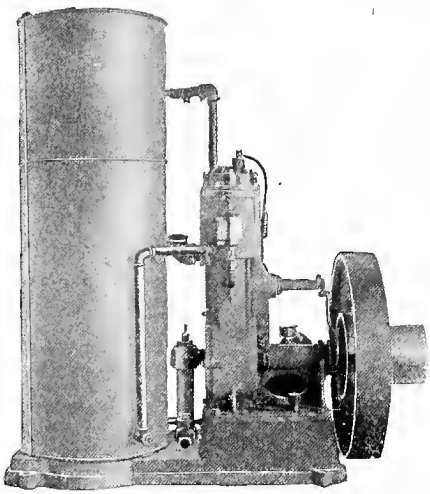
The White "Automatic" engines are especially designed for running electric light plants and other machinery requiring an absolutely steady power.

Write for complete description and prices. We make no charge for boxing or cartage.

THE "WHITE HANDY ANDY"

THE SIMPLEST ENGINE ON EARTH.

Combines the Experience of All Engine Building to Date—Two Sizes, 1½ and 3½ Horse-Power.



The "White Handy Andy" is the outcome of several years of successful advance in building the White Gasoline Engines of larger capacity, both stationary (including portable) and marine. In it are combined the experience and invention devoted to all its predecessors. It is the refinement of simplicity and the acme of strength and reliability. It has actually exceeded the expectation of its inventors and builders, and is pronounced a marvel by machinists who have examined it. We believe it is the first and only attempt to combine all the elements of reliability, durability and simplicity required of a small engine that is controlled by persons who are not experienced machinists. No adjustment or expert knowledge is required to run the "White Handy Andy;" the engine cannot get out of order if it is not interfered with, and there is nothing required to run it but to supply *water, gasoline and lubricating oil.* Start it up and it will run indefinitely as long as these three wants are supplied.

CAPACITY 1½ AND 3½ HORSE-POWER.

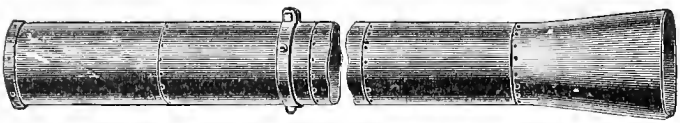
The "White Handy Andy" is built in two sizes of an actual capacity of 1½ and 3½ horse-power. Both sizes are so extremely simple that it requires but a slight knowledge of mechanics to understand the entire construction. The engine and cooling tank are mounted on the same iron base. This is far superior to a wood base, in use on some small engines, for reasons so obvious that they need not be repeated.

DIMENSIONS OF THE "WHITE HANDY ANDY."

Capacity	Base	Height	Stroke	Speed	Pulley	Weight
1½ H. P.	34x16	34-in.	5-in.	440	6x3½-in.	450 lbs.
3½ H. P.	44x20	50-in.	5-in.	400	10x6 -in.	600 lbs.

WRITE FOR COMPLETE DESCRIPTION AND PRICES.

Smoke Stacks and Guy Wire



Diameter in inches	No. 18 Steel per foot	No. 16 Steel, per foot	No. 14 Steel, per foot	No. 12 Steel, per foot	No. 10 Steel, per foot	No. 8 Steel, per foot
8	$0.52	$0.62	$0.78	$0.96	....	...
10	.60	.70	.88	1.06	....	...
12	.70	.80	.98	1.20	....	...
13	.76	.82	1.02	1.24	....	....
14	.80	.84	1.04	1.28	$1.50	$1.76
15	.86	.90	1.10	1.36	1.64	1.94
16	.90	.96	1.16	1.44	1.76	2.12
18	...	1.06	1.36	1.66	1.90	2.34
20	..	1.18	1.46	1.80	2.06	2.52
22	...	1.28	1.58	1.96	2.20	2.70
24	...	1.36	1.66	2.00	2.26	2.76

For Elbow in stack, add cost of 8 feet of stack.
" Damper " " 3 "

Guy Wire for 10 to 14 in. stacks, 1½ cts. per foot.
" " 14 " 20 " 1¾ " "
" " 20 " 26 " 2 " "

STACK PLATES

For 30 inch Boiler.....each, $4.00
" 36 " " ..... " 5.00
" 42 " " ..... " 6.00
" 44 " " ..... " 6.00
" 48 " " ..... " 7.00
" 54 " " ..... " 7.00
" 60 " " ..... " 7.00

FIRE BRICK

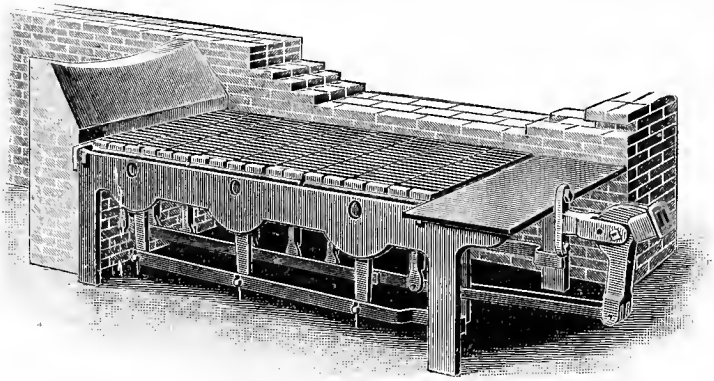
Best quality, small lots, per 1000..... ....
" " 500 to 1000, " .....

FIRE CLAY

Best quality, per barrel.....
" " ½ barrel.....
" " bushel.....

See Price Current for prices.

THE FROST IMPROVED SHAKING AND DUMPING GRATE



We present herewith an improved Shaking and Dumping Grate which has been tried and proved unrivalled for economy of fuel, durability of parts and ease of operation. It has 60 per cent of air space for the combustion of fuel, and has been carefully designed to avoid the weak points that have been found in many other grates of this class.

The part exposed to the fire, called "clips" or "fingers," weigh less than 200 lbs. each, and are the only pieces that can be burned out. All parts of the frame and mechanism are so far below the fire as not to be injured by the heat. The clips are mounted on a carrier so that any one of them can be removed when burned.

The grate is constructed so as to shake in sections six inches long by the width of the grate. Three of these sections are grouped together to form a dumping section eighteen inches long, and enable the entire contents of the grate to be dumped through a wide opening when necessary to discharge it. The six inch sections can be made to rise and fall several inches vertically for the purpose of breaking clinkers or cutting the fire. When locked in position for use as shown in the cut, it gives a perfectly flat surface with no curved or rounded parts to project upward into the fire to be burned out; neither are there any long interlocking fingers as in some forms of grates, which soon become warped by the heat and lock the grate fast so that it cannot be moved and is no better than a common grate bar. This grate will not become distorted by use so as to "set," as many do. Its parts that wear out can be easily and cheaply renewed.

When ordering state the kind of fuel to be used.

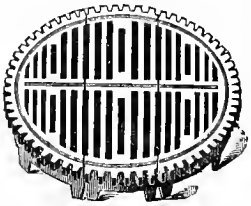
Price for boilers from 8 to 100 H. P. per square foot.....$4.50

For special price, please give size of boiler, also width and length of your fire box, and we will be pleased to submit you complete estimate.

GRATE BARS

The "Common"

The Kelly "V"



The "Round"

We carry in stock grate bars for Horizontal Boilers, 30, 36, 37, 42 and 48 inches long. Each "Common" grate is 3 inches wide and has two bars to each section. Our "V" grates are 6 inches wide. Also round grates for Vertical or Upright Boilers. Our bars and round grates are made from the best gray iron, and cannot be compared with those made of scrap that are sold at lower prices. All sizes furnished to order promptly.

——PRICES——

Grate Bars for Horizontal Boilers, either "V" or "Common," per lb. 3¾ cts.

"Round" Grates complete for Vertical Boilers..... " 4 cts.

We recommend the "V" style for burning wood, the bar grates for burning coal.

"PHOSPHO"

A Chemical Water Purifier for the Prevention or Removal of Scale in Boilers.

Guaranteed, absolutely, to produce no injurious effect on **Milk** or other food product with which the steam is brought in direct contact.

"Phospho" is sold in concentrated form, not being diluted in water, and owing to small quantity required will be found efficient and inexpensive.

EVIL EFFECTS OF SCALE IN BOILERS

Its conducting power, as compared to iron, is as 1 to 35.5. A scale 1/8 inch thick will require an expenditure of 17 per cent. more fuel; when it is 1/4 inch thick, 60 per cent.; 1/2 inch thick, 150 per cent.

To raise steam to 90 lbs. pressure, the water must be heated to about 320 degrees Fahr. In a clean boiler this can be done by heating the external surface of the boiler to about 325 degrees Fahr. If 1/2 inch of scale intervenes its non-conducting power is so great that the fire surface needs to be heated to about 700 degrees Fahr., almost red heat. The higher the temperature at which iron is kept the more rapidly it oxidizes. At any heat above 600 degrees it rapidly becomes granular and brittle. If this is borne in mind it will account for the failure of many boilers.

DIRECTIONS FOR USE.

For 10 H.P. boiler,	Ten hours use	4	ounces per day.
	Five " "	2	" " "
For 20 " "	Ten " "	6	" " "
	Five " "	3	" " "
For 25 " "	Ten " "	8	" " "
	Five " "	4	" " "
For 35 " "	Ten " "	12	" " "
	Five " "	6	" " "
For 50 " "	Ten " "	16	" " "
	Five " "	8	" " "
For 100 " "	Ten " "	20	" " "
	Five " "	10	" " "

Dissolve Phospho in warm water and inject the solution daily into boiler, or continuously with feed water, if convenient. Open and wash out boiler frequently.

When boiler is heavily scaled order **"Extra Strength Phospho"** and use till boiler is clean. Price same as for regular strength.

This preparation is in successful use in a large number of the best creameries in the United States.

5 to 10 H. P. boiler,	25 lb. package	**Price,**	$ 3 75
15 to 25 " "	50 lb. "	"	6 00
	10 lb. "	"	2 00

MECHANICAL REFRIGERATION FOR CREAMERIES.

MECHANICAL REFRIGERATION has been recently adopted by a number of our best equipped creameries, and its success in these instances gives promise of its general introduction in the near future. Following are some of the advantages of Mechanical Refrigeration as shown by practical experience:

IT GIVES A DRY STORAGE ROOM. All creamerymen readily understand that, when ice is used, this is a very difficult thing to secure, as the melting of the ice is a process which naturally develops moisture and renders the room damp, and one that does not readily keep its contents in proper condition. On the other hand, the frosted pipes of the Refrigerating Machine condense the moisture of the room upon them, thus drying the air and protecting the contents of the room from moulding.

IT SECURES ECONOMY OF SPACE. A large additional building is always required for the storage of the ice required for the season's use. In addition to this, a considerable part of the refrigerated room must also be utilized for the ice necessary for its refrigeration. Where mechanical refrigeration is used, the ice house is entirely done away with. The machine itself requires but a small space, and can generally be placed in the engine room or some part of the work room of the creamery. The piping required to transmit the cold to the refrigerated room occupies but a very limited space, and does not, therefore, necessitate any enlargement of the room for its introduction.

IT IS CLEAN. The handling and packing of the ice in the refrigerated room is ordinarily a process which brings much dirt into the Refrigerator, and frequently into the manufacturing room of the creamery. The Refrigerating Machine avoids everything of this nature, there being no ice to handle, and nothing in connection with it which brings dust or dirt into any part of the creamery.

BY THE AID OF SUITABLE appliances, the Refrigerating Machine can be utilized for cooling the milk and cream to any temperature desired, and this can be done as fast as desired. The value of this for creamery purposes will be readily understood by every creameryman. Where the operator is able to reduce the temperature of the cream to 40 or 50 degrees as soon as it leaves the separator, he has nothing to fear, even in the hottest weather, from any deterioration. It is also desirable in many cases to cool the skim milk as it leaves the separator, in order that it may be returned to the patrons in the best condition for feeding the calves and other stock. This is a very important advantage which cannot be had where ice is depended upon for Refrigerating purposes.

IT GIVES ABSOLUTE CONTROL of the temperatures of the rooms to be cooled. With Mechanical Refrigeration the refrigerated

room can be carried to any desired temperature, and can be held there at will. This is a result which cannot be obtained with ordinary Ice Refrigeration, and is very important.

Butter to be shipped in hot weather will arrive at its destination in much better condition if prior to shipment it can be thoroughly chilled to a temperature of 30 or 32 degrees. When delivered at this temperature to the transportation companies, it will stand a considerable journey, even in the hottest weather, without suffering from heat.

WHERE MECHANICAL REFRIGERATION is used, the churn room can be easily piped and its temperature controlled. This is a result which cannot be secured by the means of Ice Refrigeration, and has not been attempted. Where, however, the Ice Machines have been used, this is being done, and its advantages will be readily appreciated by every butter maker. Many of the difficulties of butter making in the hottest summer weather can be absolutely avoided where the churn and work room is held at a temperature of 60 degrees during the working hours.

THE SAVING OF LABOR BY THE USE OF Mechanical Refrigeration is also an important item, in that there is no ice to be handled daily in the filling of an ice box. There is also economy in its use, in view of the fact that it is ordinarily operated only during the hours while the machinery of the creamery is run for other purposes.

REFRIGERATOR EXTRAS

AMMONIA

Sold in 50 and 100-pound drums.....per lb. $.....

For price see Monthly Price Current.

Drums (returnable).....$25 00

Drums returned will be credited at list price less freight and cartage charges.

MINERAL WOOL

For insulating cold storage and refrigerating rooms, deadening sound, and protection against heat and cold, frost, spreading of fire, rats, mice and insects.

In bags, averaging 40 pounds each, equalling 4 cubic feet, or 200 cubic feet per ton.

Small lots, per 100 pounds.....$ 1 25
Per ton..... 20 00
Bags, extra (returnable) each..... 10

GROUND CORK

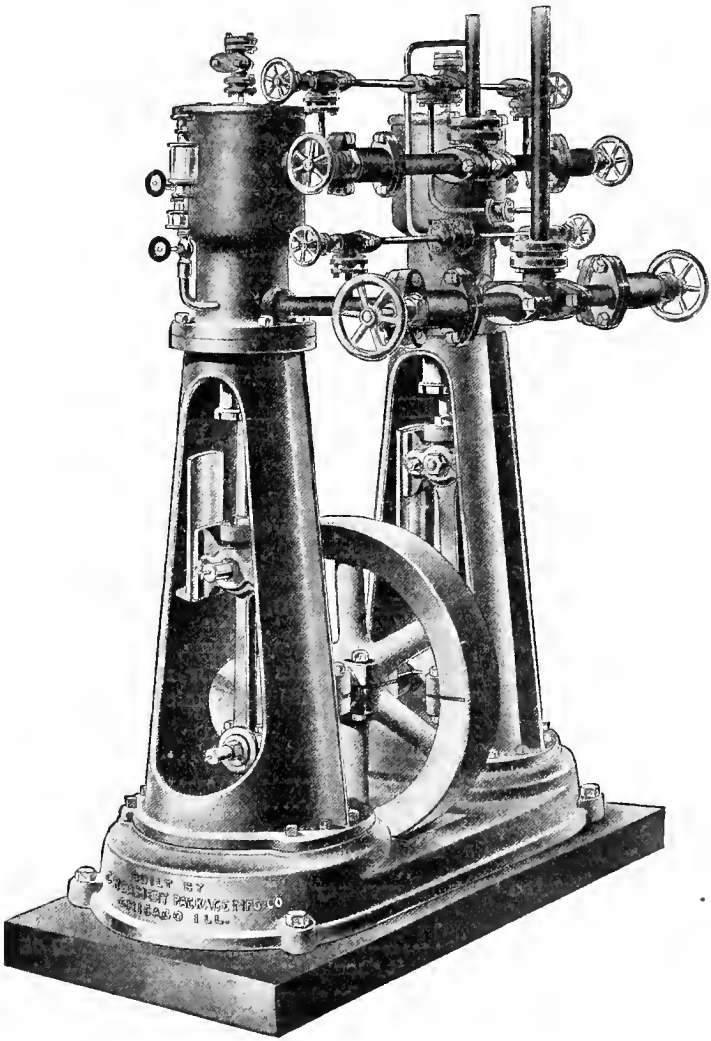
Ground or Granulated Cork is necessary to make insulation complete. We handle the very best.

Price, F. O. B. Factory.....per pound, $0 05

Ground cork, tightly packed, as it should be for best results in insulation, weighs about 5 lbs, per cubic ft. It can be shipped loose in bags, holding about 80 to 80 lbs. each, in which shape it takes first-class freight rate, or it can be baled under pressure, and in that shape takes a much lower rate. Extra charge for baling in compressed packages, 25 cts. per 100 lbs. When shipped loose, bags are charged at 40 cts. each, and are returnable at same price, less freight charges. No charge for baling material on compressed packages.

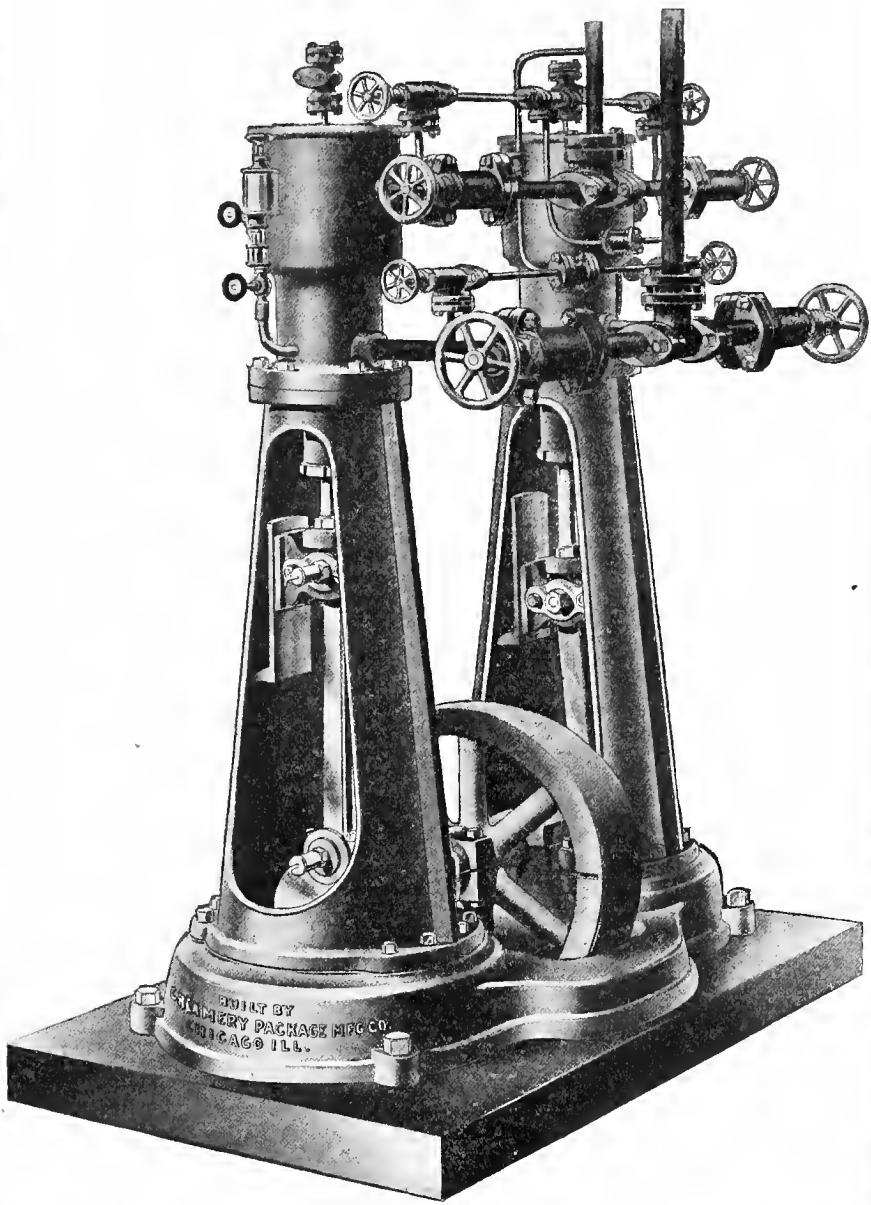
TWO-CYLINDER SINGLE-ACTING COMPRESSOR.

TWO, FOUR AND SIX TON REFRIGERATING CAPACITY.



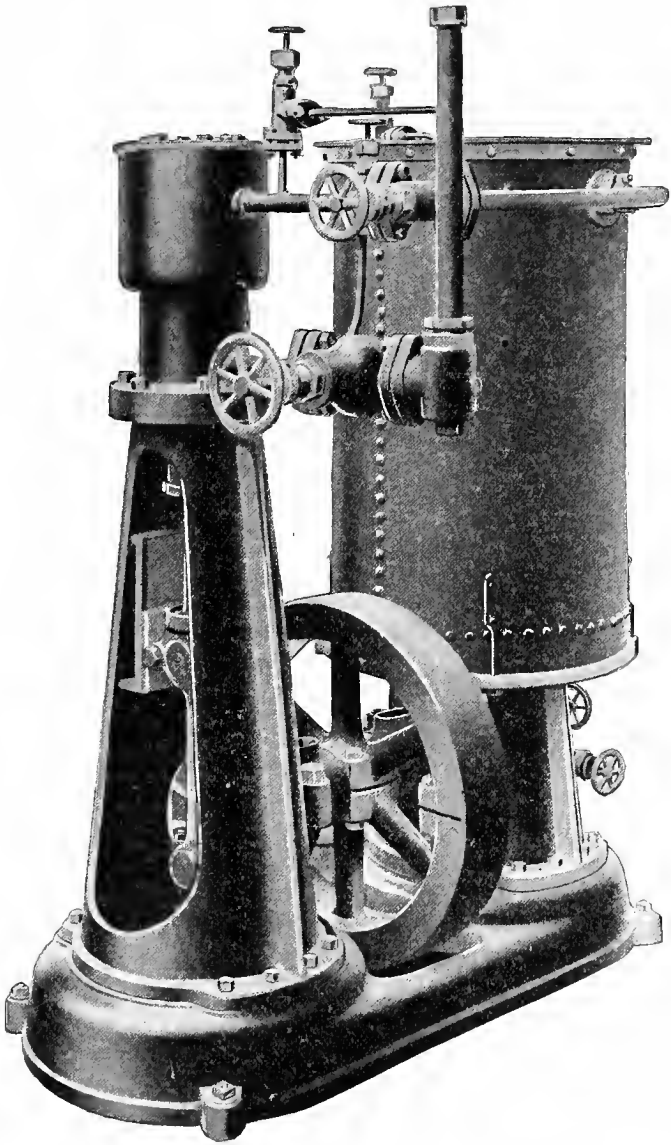
TWO-CYLINDER SELF-ACTING COMPRESSOR.

EIGHT TO TEN TONS REFRIGERATING CAPACITY.

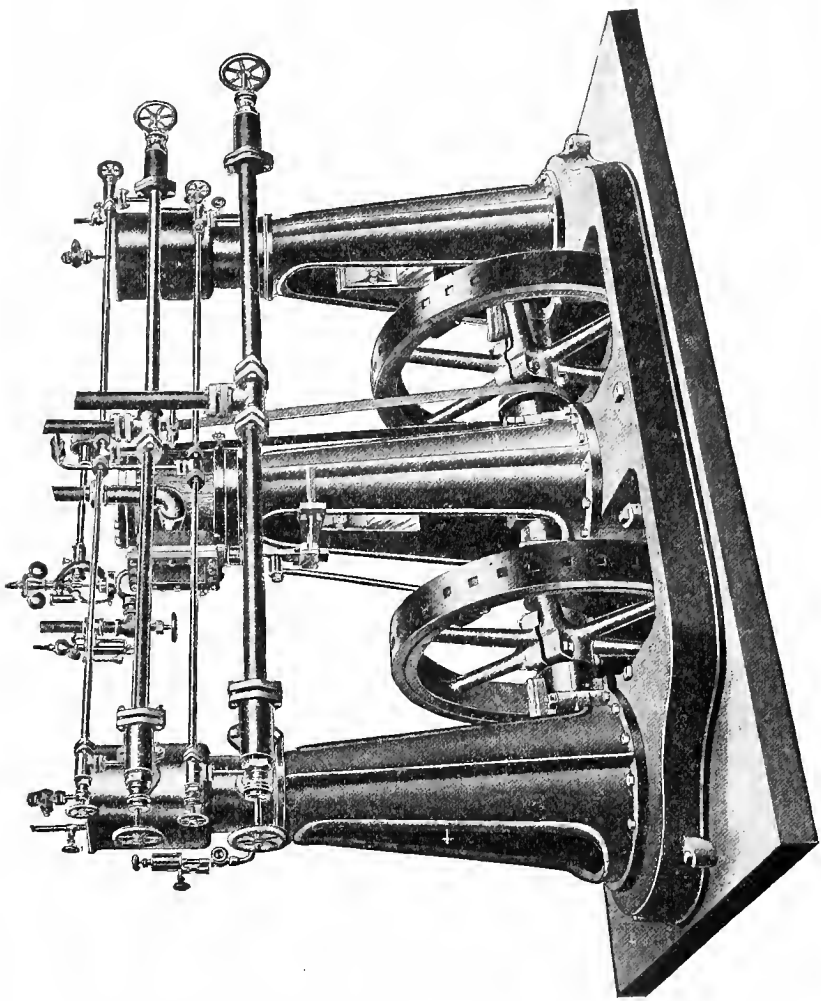


SINGLE-CYLINDER SINGLE-ACTING COMPRESSOR

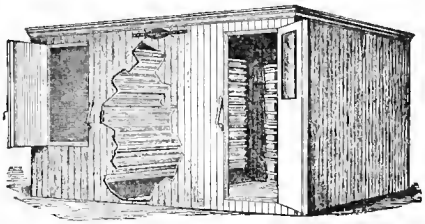
THIS STYLE USED FOR VERY SMALL PLANTS.



TWO-CYLINDER DIRECT CONNECTED SINGLE-ACTING COMPRESSOR.



BOHN PATENT AIR SYPHON REFRIGERATORS.



The most important invention for creamery men in recent years. Sold exclusively by us to the creamery trade. Our Air Syphon Refrigerators are built to order to fit any desired space in any creamery, are shipped knocked down so that they can be set up quickly by any carpenter.

We claim superiority, challenge comparison, and guarantee the following points:

1st. Low and uniform temperature from 35 to 42 degrees.
2nd. Pure and dry atmosphere.
3rd. Ease in keeping clean.
4th. Free circulation and absence of odors.
5th. Freedom from moisture.
6th. Economy in consumption of ice.
7th. Perfect drainage.
8th. Absolute prevention of mold.

MOLDY BUTTER TUBS.

Have you been troubled with mold on butter tubs? If so, you probably have wrongly attributed it to the tubs, the linings, or the soaking. In ninty-nine cases out of a hundred, it is caused by an imperfect cooling room. This statement is not guess work but is made after careful investigation. We have spent much time and effort in running down this mold question. You will find that it will grow worse every year as your cooling room becomes older. The ordinary creamery cooling room, close, stuffy, and damp, gives just the proper conditions for germinating mold. Put in one of our Air Syphon Refrigerators and you will never have the slightest appearance of mold.

CREAMERY REFRIGERATION.

Creamerymen generally are noted for progressive ideas, and constant study and thought, in endeavoring to produce by the best possible methods the highest obtainable results. They seek and demand the best machinery, and after study and comparison adopt the methods that seem to insure the best grades of butter. Every detail and process is carefully watched, from the character and quality of the milk received, clear through the process of separation, ripening, churning and working, until the butter is packed in the tub. But the subject of refrigeration, or cooling of butter after it is packed in the tub, has had less attention than any other department of creamery work. Fortunately, creamerymen are now turning their attention to the cooling room as an important feature.

The former idea that any old ice box is good enough to hold butter in it, is becoming obsolete.

A a matter of fact, in the equipment of a modern creamery plant the refrigerator is only second to the separator. Many a good churning of butter has spoiled in a defective cooling room. The average creamery cooling room is totally unfit for the purpose for which it is intended, being damp, close and musty. Cold temperature is not the only essential; circulation and dry air are more important than cold.

We can give you all three features in the Bohn Patent Air Siphon Refrigerator. Can give you lower temperature, dryer conditions and more thorough circulation than in any other known system of ice refrigeration, with absolute and immediate removal of all odors.

WHAT WE CLAIM.

In our new syphon system of refrigeration we claim, and guarantee to produce a low and uniform temperature ranging from 35 to 42 degrees, an absolutely pure and dry atmosphere, perfect circulation, an absence of odors, positive freedom from moisture, and hence absolute prevention of formation of mold; and economy in consumption of ice.

PREVENTION OF MOLD.

The ordinary creamery cooling room in use today provides just the right conditions for the formation and propagation of mold, being damp and close. The ordinary creamery cooling room is nothing but a makeshift and is, if the facts were known, more of a damage than a help to any creamery. Our Air Syphon Refrigerator, as any creameryman will realize after understanding the principle on which it works, is an absolute preventative of the formation of mold. It is at all times dry, sweet and clean. Mold on butter tubs is caused by their being stored in a damp, close cooling room. Some of the larger creameries in the country obviate the difficulty by putting in mechanical freezing or cold storage plants using the ammonia system. Such creameries never have any trouble from mould, but as these ammonia or mechanical refrigerators cost from $1,000.00 to $3,000.00, they are pretty expensive for the ordinary creamery. The invention of this air syphon system now places refrigeration within the means of every creamery.

ICE CONSUMPTION.

Refrigerator builders agree that insulation and dry air accomplish more in ice saving than all other features combined. In this feature our system surpasses all others. In the construction of these refrigerators we spare no expense to compass the highest possible degree of insulation, insuring a degree of economy in ice consumption that is impossible under any other system.

SPECIFICATIONS AND QUALITY.

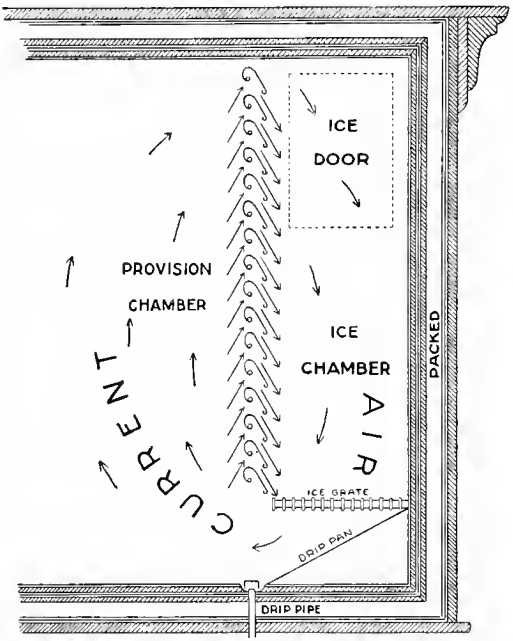
While the results we produce with our refrigerators are largely due to the patent air syphon system, an important feature is the manner of construction and insulation, which has a large bearing on the ice consumption. Our refrigerators are built with the very best material throughout. The materials used in insulating are the best known for that purpose. Our refrigerators are constructed of Georgia Pine outside. The inside lining is of Oak or Spruce. Between these inside and outside shelle we have one thickness of the best heavy felt, three thicknesses of the heaviest and most expensive waterproof insulating paper and 2 inches of packing. The ice chamber is lined throughout with galvanized iron.

While the above construction adds to the first cost, it makes a refrigerator which absolutely prevents the passage of heat or cold through the walls, thereby insuring the lowest consumption of ice and producing the highest possible results.

HOW TO ORDER.

We manufacture these refrigerators to order and require from two to three weeks to deliver after receipt of order. We make them any size or shape desired. If you have any particular place in the creamery in which it should fit, give us the dimensions of such space and indicate where the doors opening into the cooling room and also opening into the ice chamber should be located to suit your best convenience. The door into the ice chamber can be placed in the end or on the back side, so that the ice could be supplied from the outside of the creamery, if desired. We would recommend a height of seven feet as being the most convenient and practical, although we can make them any height desired. As a guide we give below a few standard dimensions, showing the number of 60-lb. tubs of butter the different sizes given will hold:

No.	Wide	Long	High	Contents, Tubs	Surface
1	6½ ft.	8 ft.	7 ft.	80	307 ft.
2	6 "	10⅓ ft.	7 "	100	352 "
3	6 "	12⅔ "	7 "	120	404 "
4	8⅓ "	10⅔ "	7 "	150	434 "
5	7½ "	12⅔ "	7 "	150	462 "
6	10 "	10⅔ "	7 "	175	490 "
7	10 "	12⅔ "	7 "	210	558 "



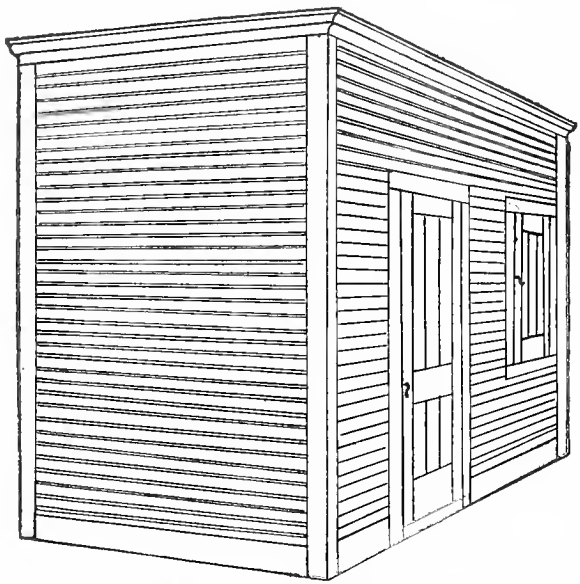
If you will indicate to us which of the above sizes will answer your purpose, or give us the dimensions of any special size to fit any special place wanted, we will be pleased to quote you prices on the same. Many creameries may find it desirable to place these refrigerators in the same space formerly occupied by the old ice boxes.

Our refrigerators are all made in sections and so marked that any ordinary carpenter can set them up quickly.

SECTIONAL VIEW.

We give above a sectional cut showing the circulation of air currents in our Air Syphon Refrigerator. The perpendicular row of galvanized air syphons are chilled by contact with the ice, causing the air to drop (as cold air always falls). This creates a vacuum in the syphons causing the air to rush into them from the cooling room. The cold air falls through the grate at the bottom of the ice chamber, enters the cooling room, rises, and returns again into the ice chamber forming a continuous current which is so strong that a match held at the bottom where the air enters the cooling room will be blown out. This continuous current keeps all parts of the cooling room of an even temperature and quickly caries all moisture and odor into the ice chamber where it is condensed on the ice and passes away through the drip pipe, so that the refrigerator is always perfectly dry and free from all odor. This process will be seen at a glance to be immensely superior to any other system of cold storage. Any creamery putting in one of these refrigerators can be thereafter absolutely certain that the butter placed in them will retain the same good qualities that it possesses when it comes from the churn, while the packages will be dry, clean and free from any possibility of formation of mold.—Write us for any further information wanted.

THE HERRICK REFRIGERATORS.



The 6 x 10 will hold about 100 tubs of butter.
The 8 x 12 will hold about 125 tubs of butter.

This cut represents our sectional creamery cooler, 10 feet long by 6 feet wide and 7 feet high. We can build them any size you may wish.

A good Cooling Room is indispensable in connection with every Creamery. With a good dry room, butter can be carried in perfect condition (if properly made) until the market will warrant selling.

No creamery cooler ever put on the market gives better satisfaction than this cooler. It is very plain on the outside, but is just the same in construction as our finest coolers on the inside. The walls are four inches thick and are packed with four thicknesses of paper and two inches of mineral wool (the best non-conductor of heat and cold known) and two thicknesses of kiln dried and matched lumber. The front and one side are made of good pine, painted. The inside walls are asbestos, painted. The walls are all made in sections, with triple matched joints, held together with screws and lag bolts, which makes all joints perfectly air tight, but can be easily taken down or set up by anyone. The door sills are protected with heavy galvanized iron and rubber strips. The distinguishing feature of this cooler is that the ice chamber takes up a small space in the end of the cooler and is very convenient to ice, which saves a vast amount of labor to what it does where the ice is put overhead in the old style coolers, thus saving about one-half the consumption of ice. In this cooler we get a direct circulation of cold, dry air, which is very essential in the keeping of butter. Write for complete description.

SIZES AND PRICES.

6 x 8	$115 00	8 x 14	$240 00
6 x 10	145 00	7 x 15	230 00
8 x 10	160 00	8 x 16	260 00
6 x 12	155 00	10 x 16	290 00
8 x 12	170 00	12 x 16	320 00
10 x 12	190 00	8 x 18	285 00
12 x 12	205 00	10 x 18	310 00
		12 x 18	340 00

Special sizes quoted on application.

"P & B" Paint, Paper and Roofing

PAINT

What P & B Paint is used for

Protecting Iron and Wood from the action of Acids, Alkalies, Moisture, Gases, etc.

Coating and Preserving all kinds of Iron Work, such as Coils, Brine-Pipes, Tanks, Condensers, etc.

For coating Brick or Wooden Walls exposed to moisture, to prevent them from Sweating; and as an aid to insulation.

For preserving Iron or Wood Work submerged or underground.

It dries quickly, is very penetrating and when dry is absolutely tasteless and odorless.

PRICE LIST OF P & B PAINTS

No. 1—Light Body

AN ALMOST IMMEDIATE DRYER.

In bbls. of about 50 gallons.....	per gal.,	$1.20
" ½ bbls. of about 30 gallons.....	"	1.25
" 5 or 10 gallon packages	"	1.30
" 1 gallon cans (6 in a case).....	"	1.40

No. 2—Standard and Medium Grade

FOR ALL GENERAL WORK

DRIES VERY QUICKLY.

In bbls. of about 50 gallons.....	per gal.,	$1.10
" ½ bbls. of about 30 gallons.....	"	1.15
" 5 or 10 gallon packages	"	1.20
" 1 gallon cans (6 in a case).....	"	1.30

No. 3—The Heaviest Grade

FOR WALLS AND SUBMERGED WORK

In bbls. of about 50 gallons.....	per gal.,	$1 00
" ½ bbls. of about 30 gallons.....	"	1.05
" 5 or 10 gallon packages	"	1.10
" 1 gallon cans (6 in a case)	"	1.20

Ruberine,—for roofs

In bbls. of about 50 gallons.....	per gal.,	$1.05
" ½ bbls. of about 30 gallons.	"	1.10
" 5 or 10 gallon packages.....	"	1.15
" 1 gallon cans (6 in a case).....	"	1.25

Universal,—a bright black

FOR STRUCTURAL IRON WORK

In bbls. of about 50 gallons.....	per gal.,	$0 90
" ½ bbls. of about 30 gallons.....	"	.95
" 5 or 10 gallon cans...	"	1.00
" 1 gallon cans (6 in a case)	"	1.10

INSULATING PAPERS

Odorless, Water and Acid Proof

ROLLS ARE 36 INCHES WIDE, AND CONTAIN 1000 SQUARE FEET EACH.

Universal	Single Ply, weight per roll 34 lbs.....	per roll,	$2.00
	Double Ply, " " 45 "	"	2.40
P & B	1-Ply, weight per roll 32 lbs.....	"	2.50
	2-Ply, " " 42 "	"	4.00
	3-Ply, " " 62 "	"	6.00
Giant, P & B	1-Ply, weight per roll 39 lbs.....	"	3.00
	2-Ply, " " 52 "	"	5.00
	3-Ply, " " 96 "	"	7.00

RUBEROID ROOFING

A light wool felt (not paper), durable roofing. This is not made of tar. Stands 250 degrees heat. Will not run at any heat. Resists fire.

PRICE LIST

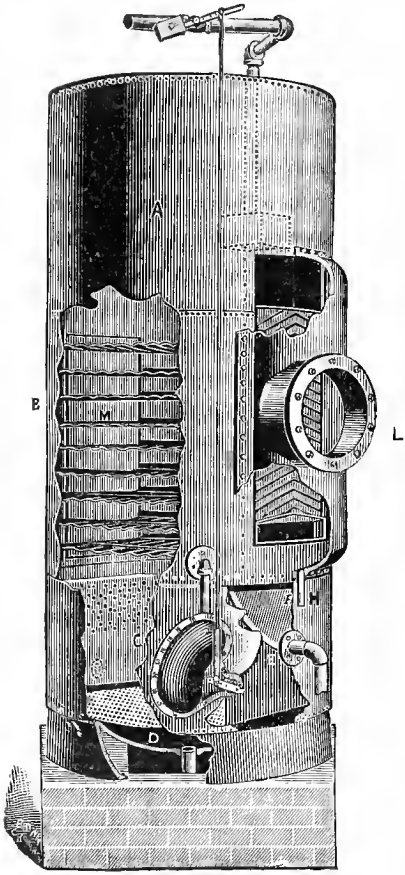
½-Ply, 22 lbs. per square of 100 sq. ft.....$1.75	2-Ply, 43 lbs. per square of 100 sq. ft.....$3.20
1-Ply, 30 " " " 100 " 2.25	3-Ply, 51 " " " 100 " 4.50

The cement necessary for seams and nails, and caps for laying the roofing, together with sufficient extra material to make a two (2) inch lap at seams, are included in these prices.

For convenience in shipping, the roofing is put up in rolls containing two squares each. The cost per roll is, therefore, twice as much as the cost per square.

PRICES F. O. B. FACTORY

STILLWELL'S PATENT LIME EXTRACTING HEATER AND FILTER COMBINED



WHAT WE CLAIM FOR IT.

We claim that, regarded simply as a HEATER, it is the best in the world; as a LIME EXTRACTOR it stands alone, unrivaled, in its perfect action. We claim that the use of this Heater will effect a saving of at least ten per cent. of fuel where soft water is used, and when "hard" and impure water is used, it will effect a saving of from fifteen to fifty per cent. of fuel, not to mention the saving to the boilers, in time, and in obviating the necessity occasioned by "scale," of frequently "blowing-off" and cleaning boilers, a job so dreaded by engineers, and so expensive to employers.

Full description and dimensions furnished on application.

PRICE LIST.

REGULAR UPRIGHT ROUND FORM.

Size	Horse Power Capacity	Appr'x. Shipping Weight	Price
No. 3	10	270	$ 90.00
No. 4	10 to 20	450	130.00
No. 5	25 to 50	700	200.00

All sizes of above style are kept in stock.

The above prices do not include any pipes or extras, but simply the Heater with all holes tapped, and necessary flanges ready to set up and attach the steam and water pipes; and glass water gauge and bibb cock, which will be found packed inside the Heater for safe shipment.

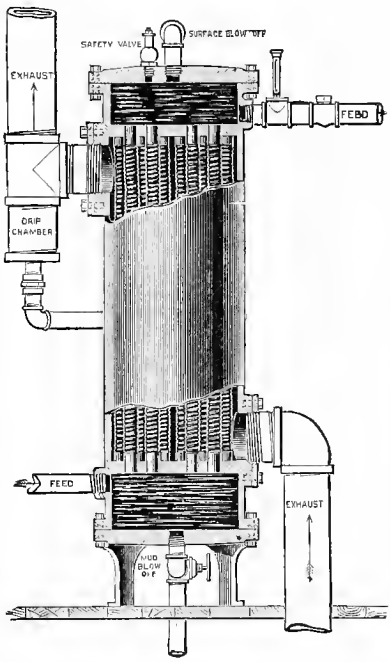
Prices of Improved Heater and Filter with Oil Separating Device.

Size B,	Capacity	10 to 20	H. P.	.....	$ 160 00
" C,	"	20 to 50	"	.....	230 00
" D,	"	50 to 100	"	.....	300 00

WATER-TUBE FEED-WATER HEATER

THE WAINWRIGHT IMPROVED.

Indorsed by All Creamerymen.



In presenting this type of Heater, we desire to call attention to the superiority of a straight tube Heater over a coil, and especially one that is provided with a settling chamber and surface blow, thus combining all the advantages that are found in the water-tube Heaters of a higher price that are now in the market. In the construction of this Heater we have aimed at two points, namely, to furnish a Heater the construction of which is second to none, and at the same time to place the price no higher than is paid for a coil Heater.

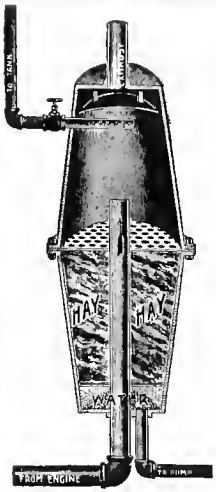
It is universally admitted that a straight tube Heater that is provided with the proper means of blowing it off, and built so that it gives a chance for the impurities of the water to settle and be disposed of, is in every way better than a Heater that allows all the impurities to pass into the boiler, to foul and burn it out. This important thing cannot be done with a coil Heater, but in the heater that we present, ample means have been allowed to accomplish it.

The operation of the Heater is as follows: The water enters at point marked feed, as shown by the arrow mark, passes into the settling chamber, thence up through the tubes into the water chamber, from which it passes to the boiler; the exhaust enters at bottom of shell, and finds exit at top as shown. This can be reversed if it is more convenient. Mud, also surface blow-offs, are provided, as shown. The Heater can be used in any position desired, the results being perfectly satisfactory.

We wish to call attention to the fact that copper tubes only are used in all of these Heaters; this in itself should claim the attention of all first-class engineers and steam users. Nearly all other Heaters are built with brass tubes, a metal that is composed of other metals, and is not a pure metal, the composition depending upon the honesty of the manufacturer and the pureness of the metals he uses. All tubes used in these Heaters are made of lake Superior copper, of a guaranteed fineness, thus making their durability beyond any question.

SIZES AND PRICES.

Horse Power.	Diameter in Inches.	Height in Inches.	Size Exhaust in Inches.	Size Feed in Inches.	Weight, Pounds.	Price.
Up to 25	14 x	26¼	4	1	500	$ 45 00
25 " 50	15 x	44½	5	1	825	80 00
50 " 60	15 x	44½	5	1	860	100 00
60 " 80	15 x	61½	5	1	900	120 00
80 " 100	17 x	55¾	6	1½	950	150 00

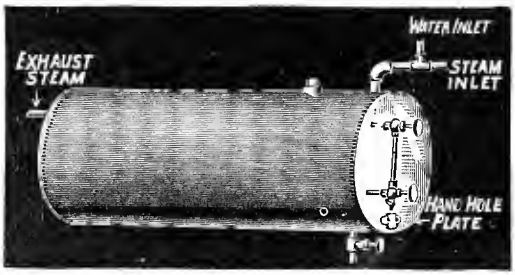


KELLEY'S CONDENSER, HEATER AND FILTER

The exhaust steam comes in at the bottom, through the exhaust pipe, and strikes the water (which is fed in from a tank above, through pipe marked "to tank") and throws it against the baffle plate at the top of the heater, after which the water falls and is filtered through the hay in the bottom half of the heater. Whatever steam is not condensed by coming in contact with the water escapes through the pipe in the top of the heater. The water is pumped from the heater to the boiler by an ordinary boiler pump. There is no packing in the joints of this heater to blow out and leak, but they are ground the same as an engine cylinder head.

Height	3 ft.
Diam. of center	18 in.
" " either end	12 "
Weight	200 lbs.
Price of heater, fitted for any size exhaust	$25 00

"ACME" WATER HEATER



This cut represents our new Water Heater for heating the water before it is pumped into the boiler. It heats the water to the boiling point by the exhaust steam. By the use of these heaters a saving of coal of from 20 to 40 per cent. is obtained. We recommend the use of a steam pump in connection with these heaters, as they insure a steady flow of boiling hot water into the boiler. It can be set crossways above the boiler, where it is out of the way and takes up no space in the engine room.

As will be seen by the above cut, we connect the water supply pipe directly into the exhaust pipe. The steam pump connection is three inches above the bottom on the side of heater. A plug can be removed from the top of heater, to insert a hose, and a hand hole is on front end near bottom for cleaning. The exhaust is at the rear. With these heaters we supply a water gauge as shown in cut. Pipe and fittings are extra. The heater is 2 feet in diameter by 5 feet long.

Price with water gauge $30 00

DIRECTIONS FOR SETTING UP AND RUNNING PUMPS

Never use pipes of smaller size than given in the tables. When long pipes are used it is necessary to increase the size to allow for the increased friction. Especially must this be observed in suction pipes.

Use as few elbows, T's and valves as possible, as they greatly increase friction. Use full round bends rather than elbows.

Care should be taken to guard against leaks in the suction pipe, as a very small leak destroys the effectiveness of the suction of a pump

When hot water is to be pumped, the difficulty of lifting by suction increases by the temperature. It should therefore be arranged to flow into the pump, if so hot as to vaporize, when the pressure of the atmosphere is removed.

A large vacuum or suction chamber placed on the opposite side of the pump from where the suction enters on the suction pipe near the pump, is always advantageous, and when the pump is run at a high speed it is a necessity.

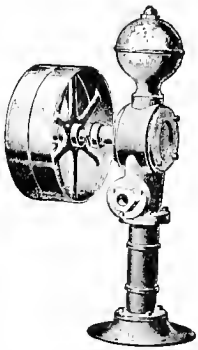
Ordinary speed to run steam pumps is from 75 to 100 feet piston travel per minute. For continuous boiler feeding about one-half that speed is recommended.

Keep your pump clean and stuffing boxes well packed.

PUMPS

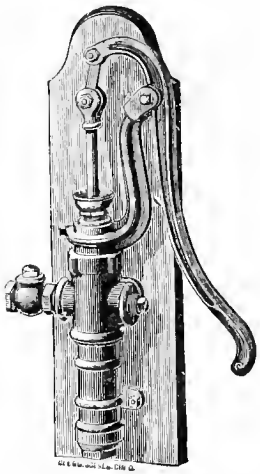
COVERED CRANK SUCTION AND FORCE

PRICES



For either shallow or deep well and suitable for 1¼-inch pipe.
With tight and loose pulleys, 3x16.....$30 00
" crank and single pulley, 3x16..... 25 00
Speed per minute, 50
Above pump should have 3x16 cylinder.

For deep well, cylinders are extra. See page 51 for prices.



HAND BOILER FILLING

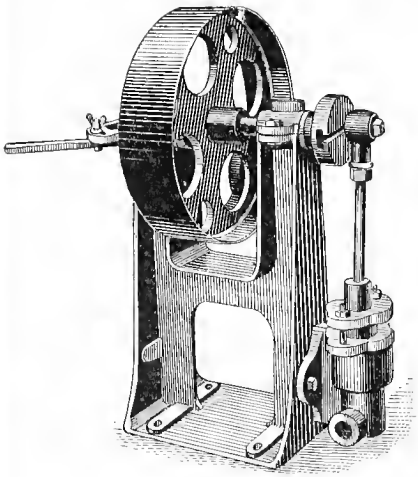
This cut shows boiler filling pump, which is used for filling boilers before starting the fire, and is valuable for washing the boiler. A hose should be connected to the discharge, 25 feet long, with a nozzle for washing the boiler or putting out fire. Air chambers extra.

SPECIFICATIONS AND PRICES

	Size Cylinder	Fitted for	With Plain Valves	With Metallic Valves
Without check valve.	2 in.	1-in. pipe.	$ 8 00	$10 00
With check valve....	2 "	1 " "	10 00	12 00

We can furnish hose and connection, all ready for use, at lowest prices.

PUMPS



STEAM BOILER FEED PUMP

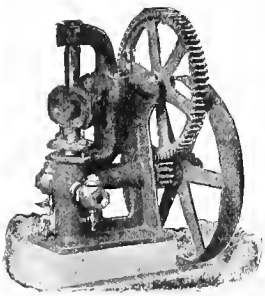
Price considered, this Pump is unsurpassed for simplicity and durability.

Diam. of T. & L. Pulley.... 16 in.
Face of T. & L. Pulley ..... 3 "
Speed per minute .....30 to 50 rev.
Inlet and Outlet, size..... 1 in.
Height ..... 2 ft.
Weight.....175 lbs.

PRICE

With ¾ inch check valve.....$20 00

"SCOTCH YOKE" POWER PUMP.



No. 1A, 2A, 3A.

FOR BOILER FEEDING AND GENERAL SERVICE.

The special feature of this Pump is that the plunger is guided at both ends, and the power is applied between the bearings by means of a pin working back and forth in a slot, making a design very similar to the well-known "Scotch Yoke." The pin is provided with a roller which gives a smooth and easy motion and reduces wear; also renders repairing easy.

These Pumps are single-acting and may be run in either direction. Brass check valves and necessary drip cocks are furnished. When desired we can cover the plungers and line the glands with brass at a small extra cost. These Pumps will be found very compact, strong and serviceable.

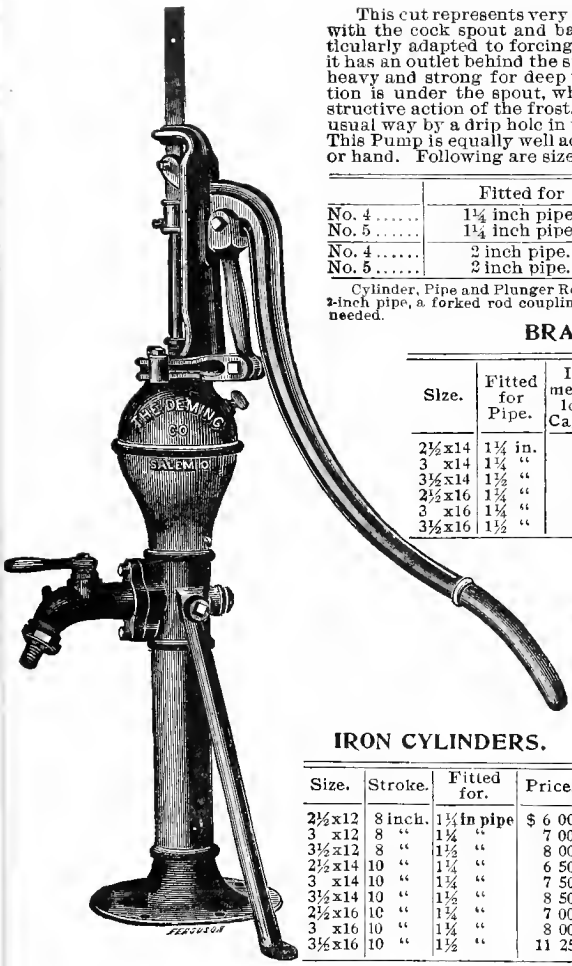
SIZES AND PRICES.

No.	Piston inches.	Stroke inches.	Pipes inches.	Pulley inches.	Price.	Power of Boiler.	Weight pounds.	Gallons per hour.
1	1	2	⅜	12x2	$18 00	3	35	18
1A	1	2	⅜	14x2	28 00	3	45	18
2	1⅛	2½	⅜	14x2	20 00	5	45	30
2A	1⅛	2½	⅜	14x2	32 00	5	55	30
3	1¼	3	½	16x3	24 00	10	65	60
3A	1¼	3	½	16x2	38 00	10	80	60
4	1½	3	¾	16x3	28 00	15	75	90
5	2	3	1	18x4	32 00	30	130	180
6	2½	3	1	18x4	38 00	45	170	270
7	2	6	1¼	22x4	50 00	60	200	360
8	2½	6	1¼	14x4	70 00	80	300	480
9	3	6	1½	14x4	85 00	100	400	600

The capacities are rated at fifty strokes per minute. Numbers 1 to 8 have no gears. Numbers 1A, 2A and 3A are geared 5 to 1. Numbers 8 and 9 are geared 4 to 1. Always state the fluid to be pumped, the lift, also height or pressure to work against.

FORCE PUMP

With Back Outlet and Stop Cock.



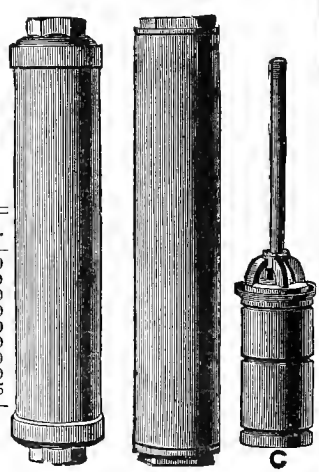
This cut represents very accurately Force Pump Standard with the cock spout and back outlet. This standard is particularly adapted to forcing water into an elevated tank, as it has an outlet behind the spout for that purpose. It is made heavy and strong for deep wells. The suction pipe connection is under the spout, which prevents liability to the destructive action of the frost. It is made anti-freezing in the usual way by a drip hole in the pipe below the base of pump. This Pump is equally well adapted for windmill, steam power or hand. Following are sizes and prices of Pump Standards:

	Fitted for	Height.	Price.
No. 4	1¼ inch pipe.	47 inches.	$14 50
No. 5	1¼ inch pipe.	49 inches.	15 50
No. 4	2 inch pipe.	51 inches.	$16 00
No. 5	2 inch pipe.	53 inches.	17 00

Cylinder, Pipe and Plunger Rod are extra. With 10-inch stroke, for 2-inch pipe, a forked rod coupling for tubular wells is furnished when needed.

BRASS CYLINDERS.

Size.	Fitted for Pipe.	Iron Attachments and Follower. Brass Cage and Valve.	Iron Attachments and all Brass Plunger.	All Brass.
2½x14	1¼ in.	$ 9 25	$10 50	$14 75
3 x14	1¼ "	10 25	11 75	16 25
3½x14	1½ "	12 25	14 75	21 00
2½x16	1¼ "	10 25	11 75	16 00
3 x16	1¼ "	11 25	12 75	17 25
3½x16	1½ "	13 50	16 00	22 25



IRON CYLINDERS.

Size.	Stroke.	Fitted for.	Price.
2½x12	8 inch.	1¼ in pipe	$ 6 00
3 x12	8 "	1¼ "	7 00
3½x12	8 "	1½ "	8 00
2½x14	10 "	1¼ "	6 50
3 x14	10 "	1¼ "	7 50
3½x14	10 "	1½ "	8 50
2½x16	10 "	1¼ "	7 00
3 x16	10 "	1¼ "	8 00
3½x16	10 "	1½ "	11 25

PUMP RODS.

⅜ Black Iron, 16 ft. lengths, per lb.....$0 04
7-16 Black Iron, 16 ft. lengths, " 04
⅜ Galvanized Iron, 16 ft. lengths, per lb...$0 05
7-16 Galvanized Iron, 16 ft. lengths, " .. 05
Steel Rods extra, per lb.....$0 02

COUPLINGS FOR PUMP RODS.

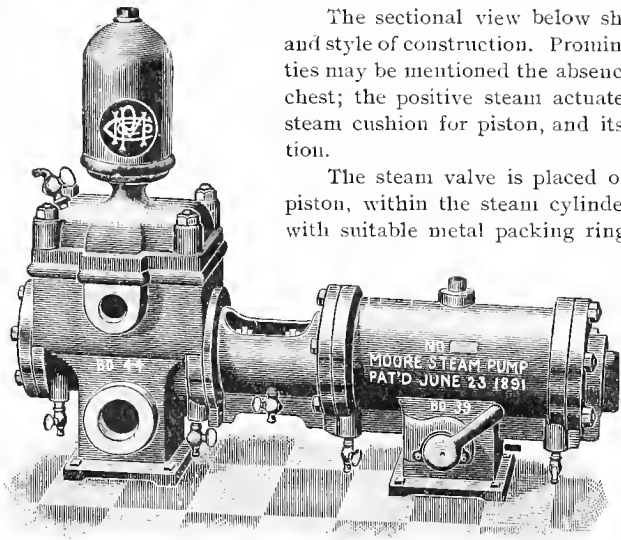
PRICES.

Fitted for Rod.....	⅜	7-16	⅜ x 7-16
Threads to inch	14	12	14 x 12
Malleable, per lb.....	$0 40	$0 40	$0 40
Galvanized, per lb	60	60	60

THE MOORE INDEPENDENT STEAM PUMP

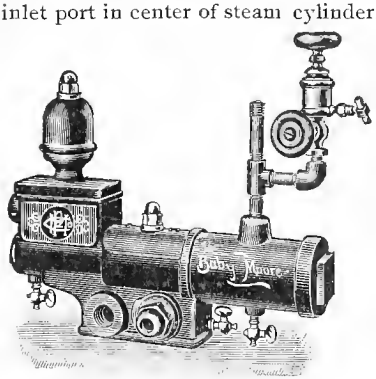
The sectional view below shows the working parts and style of construction. Prominent among its peculiarities may be mentioned the absence of the ordinary steam chest; the positive steam actuated valve; the noiseless steam cushion for piston, and its simplicity of construction.

The steam valve is placed on the body part of the piston, within the steam cylinder, with heads supplied with suitable metal packing rings. Within the body of the piston are the steam ports, leading to each end of the cylinder, registering alternately with the annular grooves of the valve in its actuation.



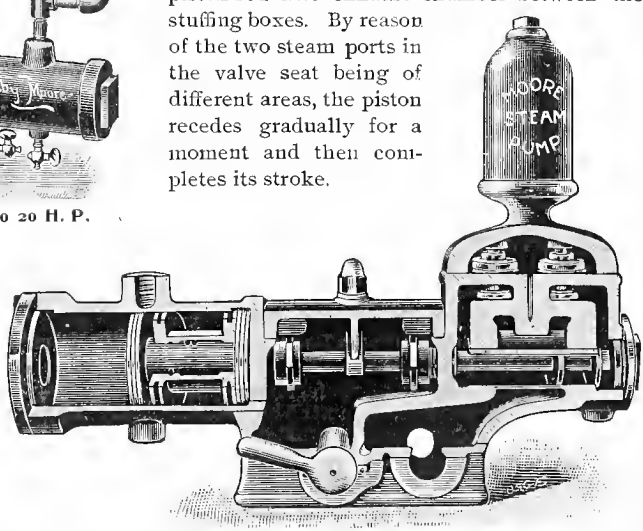
Exterior View.

The longitudinal sliding motion of the valve on its seat is limited between the piston heads; the valve being carried on its reciprocation by the piston, until its head passes the steam inlet port in center of steam cylinder, thus admitting steam between the valve head and piston head, and forcing the valve against the opposite piston head; changing the relation between the annular grooves in the valve and steam ports in the piston, causing a reverse motion of the piston, thence through the hollow piston-rod into exhaust chamber between the stuffing boxes. By reason of the two steam ports in the valve seat being of different areas, the piston recedes gradually for a moment and then completes its stroke.



Style "B" Up to 20 H. P.

We invite all factory men to inspect this pump before buying elsewhere. It will be money in your pocket.



Sectional View of Moore Steam Pump.

Sizes B, BB, BC and CC.

GENERAL ADVANTAGES

Its simplicity of construction, its small number of parts, its large wearing surface for the valve, together with its positive valve motion, with no possible chance of its becoming balanced on its center, through leakage or other cause, makes it the most desirable pump on the market.

By the method used in restricting the exhaust steam, with the slow start and steam cushion for the piston, the speed of the pump is automatically regulated—never running too fast to take suction, or fast enough to injure its working parts should the water supply give out. It can be regulated to supply water in the boiler to a uniform height, without attention.

As it will work with a lower steam pressure than an injector or most steam pumps, the boiler can be filled after stopping the engine, without any extra fire. **As a boiler feeder, this pump has no equal.** It is made to couple on either right or left. With the working parts entirely enclosed, it can be set up in the most convenient place, without fear of any damage from grit or dust.

The stuffing boxes being enclosed in the exhaust chamber, in the three smaller sizes, there is no drip or steam escaping into the room, and by means of the lever on the front side of the pump, the exhaust steam and all drippings from the stuffing boxes can be thrown into the suction chamber to warm the water, and is then returned to the boiler.

SIZES AND PRICES

MOORE STEAM PUMPS

Name	Steam Cylinder	Water Cylinder	Stroke	Pipe Connection				Displacement per Stroke	Gallons per Minute	Gallons per Hour	Horse Power Guaranteed	Price	Extra for Hand Attachment
				Steam	Exhaust	Suction	Discharge						
B.	2½	1⅜	2	¼	⅜	¾	½	.015	3.33	200	20	$30.00	$5.00
B. B.	3	1½	2½	⅜	½	¾	½	.0191	5.83	350	35	50.00	6.50
B. C.	3	1¾	3	⅜	½	1	¾	.0312	8.33	500	50	60.00	7.50
C. C.	3	2	3	⅜	½	1¼	1	.0408	9.18	550	55	65.00	7.50
B. D.	4	2½	4	⅜	¾	1½	1¼	.0850	11.66	700	70	75.00	....
B. E.	5	2½	4	½	¾	1½	1¼	.0850	13.33	800	80	87.50	....
B. F.	5	2¾	4	½	¾	1½	1¼	.1028	15.00	900	90	90.00	....
B. G.	5	3	4	½	¾	1½	1¼	.1224	16.66	1000	100	100.00	....

GUARANTEE TO USERS OF MOORE STEAM PUMPS

We guarantee all Steam Pumps made by us to be equal to the best the market affords, in quality and service.

All pumps sold from our factory, or through our agents, are made of the best material for the purpose, and in the best workmanlike manner. They are thoroughly tested by, and under the supervision of, one of the company, and any pump ordered according to our tables can be returned at our expense and purchase money refunded, or another pump furnished if desired, if it does not perform the service.

All parts are made duplicate, interchangeable, and can be furnished promptly.

Pumps will be furnished to responsible parties and ample time given to test the same.

MOORE ARTESIAN OR DEEP WELL ENGINE.

DIRECTIONS FOR CONNECTING.

First measure up and cut pipe and rods proper length. A nipple should be used next the head, into which a part of the union should then be fastened. When pipe is in the well, place the head directly over the pipe, draw up the pump rod and pull down piston rod, couple these with a rod coupling; then drop the head into place and connect the pipe by means of a union.

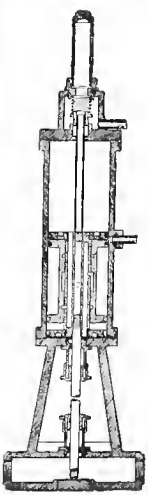


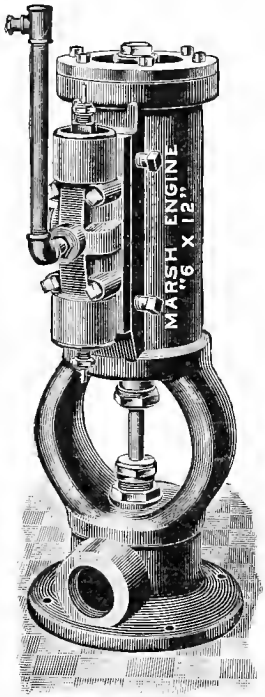
Table of Sizes of Heads, Cylinders, and Other Details.

Size of engine.	Floor space in inches.	Shipping weight in lbs	Pipe Connections. Steam in inches.	Pipe Connections. Exhaust in inches.	Pipe Connections. Suction in inches.	Pipe Connections. Delivery in inches.	Pump rod threaded for pipe.	Elevation of water—feet.	Diameter, in inches, of water cylinder.	Pipe connections, water cylinder, in inches	Weight of water to be lifted at each stroke, ½ lb. to sq. in. 1 foot rise.	Lifting power of engine at 80 lbs. steam, less 20 per cent.	Capacity per stroke, in gallons.	Strokes per minute, one way.	Capacity per minute, in gallons.	Capacity per hour, in gallons.	Capacity per 10 hours.	Approximate bbls. (40 gals.) per day (10 hrs.)	Price—For upright head.
4x6	9x10	100	¾	¾	2	1	¼	25	4½	2	198	800	.4131	50	20.65	1239	12390	300	$40.00
	9x10	100	¾	¾	2	1	¼	50	4	1½	314	800	.3264	45	15.69	941	9410	230	
	9x10	100	¾	¾	2	1	¼	75	3½	1½	356	800	.2499	40	9.99	599	5990	150	
	8x10	100	¾	¾	2½	1	½	100	3	1½	353	800	.1836	35	6.42	385	3850	95	
	9x10	100	¾	¾	2½	1	½	150	2½	1¼	307	800	.1275	30	3.82	229	2290	55	
	9x10	100	¾	¾	2	1	¼	200	2	1	314	800	.0816	25	2.04	122	1220	30	
	9x10	100	¾	¾	2	1	¼	250	1¾	1	300	800	.0625	20	1.25	75	750	20	
	9x10	100	¾	¾	2	1	¼	300	1½	1	265	800	.0459	20	.91	55	550	10	
4x8	9x10	100	¾	¾	2	1	¼	25	5	2½	245	800	.6800	50	34.00	2040	20400	500	50.00
	9x10	100	¾	¾	2	1	¼	50	4½	2	377	800	.5508	45	24.78	1487	14870	370	
	9x10	100	¾	¾	2	1	¼	75	4	1½	470	800	.4352	40	17.40	1044	10440	250	
	9x10	100	¾	¾	2	1	¼	100	3½	1½	481	800	.3332	35	11.66	699	6990	175	
	9x10	100	¾	¾	2	1	¼	150	2½	1¼	368	800	.1700	30	5.10	306	3060	75	
	9x10	100	¾	¾	2	1	¼	200	2	1	314	800	.1088	25	2.72	163	1630	40	
	9x10	100	¾	¾	2	1	¼	250	1¾	1	300	800	.0833	20	1.66	100	1000	25	
	9x10	100	¾	¾	2	1	¼	300	1½	1	265	800	.0612	20	1.22	73	730	15	
5x10	12x12	225	1½	1½	2½	1½	⅜	25	6	3	353	1256	1.2240	50	61.20	3672	36720	900	80.00
	12x12	225	1½	1½	2½	1½	⅜	50	5	3	490	1256	.8500	40	34.00	2040	20400	500	
	12x12	225	1½	1½	2½	1½	⅜	75	4½	2	596	1256	.6885	30	20.65	1239	12390	300	
	12x12	225	1½	1½	2½	1½	⅜	100	4	2	628	1256	.5440	25	13.60	816	8160	200	
	12x12	225	1½	1½	2½	1½	⅜	150	3½	1½	721	1256	.4165	25	10.41	624	6240	150	
	12x12	235	1½	1½	2½	1½	⅜	200	3	1½	706	1256	.3060	25	7.65	459	4590	100	
	12x12	225	1½	1½	2½	1½	⅜	250	2½	1¼	613	1256	.2125	20	5.31	318	3180	75	
	12x12	225	1½	1½	2½	1½	⅜	300	2	1¼	471	1256	.1360	20	3.40	204	2040	50	

The Marsh Steam or Gas Pressure Engine

FOR DEEP WELL PUMPS

This Engine is designed for general pumping, to take the place of windmills and other cumbersome and expensive contrivances. It is adapted for pumping water from deep or shallow wells for farms, factories, dwellings, etc. Is self-regulating in every way and is the cheapest and most economical device for the above purpose yet offered. It can be attached to any plunger rod; will elevate water from any depth and do it constantly, without any attention. Don't buy a deep well pump until you have seen this Engine in operation.



We make this Engine in three sizes, as follows: four by six, four by eight and six by twelve inches

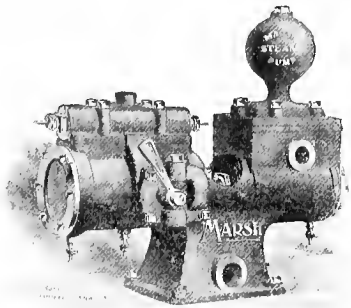
CAPACITY OF MARSH DEEP WELL PUMPING ENGINE

Showing size of Water Cylinders suitable for elevations of 25 to 300 feet, with 80 lbs. steam pressure.

Size of engine	Elevation of water in feet	Size of water cylinder	Size of pipe connection	Rev. per min.	Capacity per stroke	Capacity in gal. per hour	Size of steam pipe	Size of exh'st pipe	Weight of Engine.	Price
4 in. by 6 in.	25	4½	2	40	.4131	990	⅜	¾	70 lbs.	$40.00
	50	4	2	40	.3264	780	"	"		
	75	3½	1½	40	.2499	590	"	"		
	100	3	1½	40	.1836	440	"	"		
	150	2½	1¼	40	.1275	300	"	"		
	200	2	1	40	.0816	195	"	"		
	250	1¾	1	40	.0625	150	"	"		
	300	1½	1	40	.0459	110	"	"		
4 in. by 8 in.	25	4½	2	40	.5508	1320	⅜	¾	80 lbs.	$50.00
	50	4	2	40	.4352	1040	"	"		
	75	3½	1½	40	.3332	800	"	"		
	100	3	1½	40	.2448	585	"	"		
	150	2½	1¼	40	.1700	408	"	"		
	200	2	1	40	.1088	260	"	"		
	250	1¾	1	40	.0833	200	"	"		
	300	1½	1	40	.0612	145	"	"		
6 in. by 12 in.	25	6	3	30	1.468	2640	¾	1	230 lbs.	$100.00
	50	5	2½	30	1.02	1835	"	"		
	75	4½	2	30	.8262	1485	"	"		
	100	4	2	30	.6528	1175	"	"		
	150	3½	1½	30	.4998	900	"	"		
	200	3	1½	30	.3672	660	"	"		
	250	2½	1¼	30	.2550	460	"	"		
	300	2	1	30	.1632	290	"	"		

NOTE.—Capacity per hour is for Single Acting Water Cylinders. Double Acting Water Cylinders can be used on short suction lifts and will discharge twice the amount of water. In second column the elevation in feet means the combined suction and discharge in feet.

MARSH STEAM PUMP



A very simple, durable and reliable independent Steam Pump for pumping hot or cold liquids of any kind. Has these advantages: A perfectly balanced self-governing valve, thereby using less steam than any pump on the market; all parts are interchangeable; brass lining in water cylinder; all-metal, noiseless water valves. The most economical boiler feeder made.

The lever shown on the front of the pump is attached to a two-way valve, and is used to deflect the exhaust steam, either into the atmosphere or into the suction chamber of the pump. When the exhaust steam is deflected into the suction chamber, it is condensed by the cold water and returned with its heat to the boiler. Thus all the heat employed in the steam which runs the pump is saved, and the work done by the pump is obtained without cost.

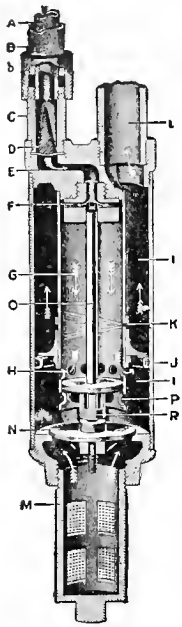
These pumps are fully guaranteed and placed on 30 days' trial.

	B	BB	C	D	E
Diameter of steam cylinder	2½	3	4	5	5
Diameter of water cylinder	1⅜	1¾	3	3	3
Length of stroke	2	2	3	3½	6
Size of steam pipe	¼	⅜	⅜	½	½
Size of exhaust pipe	⅜	½	½	¾	¾
Size of suction pipe	¾	1	1¼	1½	1½
Size of discharge pipe	½	¾	¾	1	1¼
Strokes per minute	200–350	175–300	150–250	140–200	130–180
Gallons per stroke	.015	.0208	.0702	.110925	.1836
Gallons per minute	3.33	6.66	10.83	16.66	25
Gallons per hour	200	400	650	1000	1500
Maximum H. P. guaranteed	20	35	60	100	150
Floor space	7x12	8x16	10x21	11x23	10x32
Weight	23 lb.	50 lb.	100 lb.	140 lb.	250 lb.
Price without lever	$30 00	$50 00	$75 00	$100 00	$150 00
Price with lever	35 00	55 00	85 00	110 00	.....
Price of water packing	10	10	15	20	.....
Pieces of water packing required	2	2	3	3	.....

THE ERWIN STEAM RAMS.

(Patented in 1895 by JAMES B. ERWIN and WM. KIRKWOOD.)

For Elevating Water for apartment buildings, residences, summer resorts, hotels, factories, farm use, stock yards, railroad tanks, cemeteries, mining and irrigation purposes, steamboats, villages, etc.



Erwin Steam Ram.
(Sectional view.)

The Erwin Steam Ram is simple in construction, economical in use of steam and requires no packing, no oil, no attention. It is suitable for tubular and other wells, and for raising water from cisterns, lakes or streams.

We recommend our Standard Rams for forcing water to heights up to 60 feet, and similar sizes of our Low-lift Rams for elevating larger quantities to heights up to 40 feet. Capacities range from 400 to 10,000 gallons per hour.

When the Erwin Steam Ram is at work, the water is elevated or forced by the alternate action of steam and atmospheric pressure. The steam having first driven the water from the ram, is instantaneously condensed and a vacuum is formed. A volume of water is then driven into the ram by atmospheric pressure, and not only fills the vacuum chamber, but a large proportion passes on through the ram and into the discharge pipe. The steam and air thus co-act to make its discharge of water continuous. To the facts that a good portion of the work is done by the atmosphere and that friction is almost entirely eliminated, the high efficiency of the ram is largely due.

By connecting the discharge pipes of two of our single rams of the same size with a common discharge chamber similar to the arrangement shown opposite, a double ram is formed of twice the capacity of a single one. Each ram forming the combination has a separate steam pipe but the same discharge pipe. While they work in unison in forcing water, either one can be shut down by turning off its steam valve without stopping the other. In this they differ from ordinary duplex pumps where one cylinder at a time only forces water, and where, if any part should give out, both cylinders would become inoperative.

On account of their small diameter the Single Rams may be suspended from their steam and water pipes below the surface of the water in small tubular wells in addition to other places.

The rams are made of brass with steam metal bearings. The strainer is of malleable iron with a brass screen. All parts are built interchangeable and put together with the utmost care. Each standard ram is adapted and tested, before leaving the shop, for raising water up to 60 feet above the ram itself, and each low-lift ram for elevating water 40 feet above itself. The capacities given below are all estimated on a 40-foot elevation with 75 pounds steam pressure.

PRICE LIST OF SINGLE STEAM RAMS.

Style	STANDARD.					LOW-LIFT.	
Size, No.	A2	A2½	A3	A4	A5	C3	C5
Steam Pipe in.	¼	⅜	⅜	½	¾	½	1
Covering Pipe in.	½	¾	¾	1	1¼	1	1½
Discharge Pipe in.	¾	1	1	1½	2	1½	2
Inlet Pipe in.	1	1½	1½	2	3	1½	3
Capacity per Hour gal.	400	700	1000	2000	3300	1250	3000
Diameter of Outer Cylinder in.	2	2½	3	4	5	3	5
Height in.	10	12	12	14	17	12	17
Size Well Casing Ram will enter (inside diameter) in.	2½	3½	3¾	4¾	5 3/16	4	5⅝
Approx. Shipping Wt lbs.	5	11	13	22	31	12	29
Price each	25.00	30.00	35.00	50.00	60.00	35.00	60.00

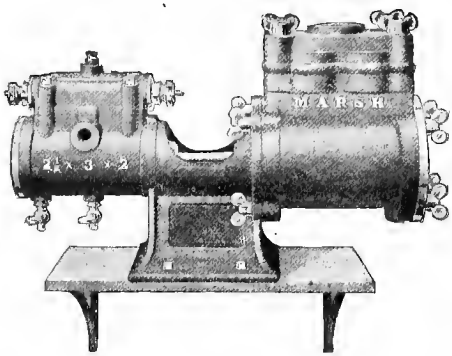
The height of the ram does not include bottom strainer, but this and the steam pipe nipple, with its screen only, are supplied with each one.

SEND FOR SPECIAL ILLUSTRATED CATALOGUE.

Erwin Single Steam Ram.

STEAM MILK PUMPS

"MARSH" SINGLE CYLINDER



The illustration shows the new "Marsh" Pump, designed to handle creamery products, and is especially adapted for elevating whole milk, cream or skimmed milk.

The pump cylinder can be quickly taken apart for cleansing without the use of a wrench—being provided with thumb nuts at fastening studs, as shown in cuts, and pipe connections made with hand grip unions. All parts of pump cylinder are made of best iron and steel—no brass.

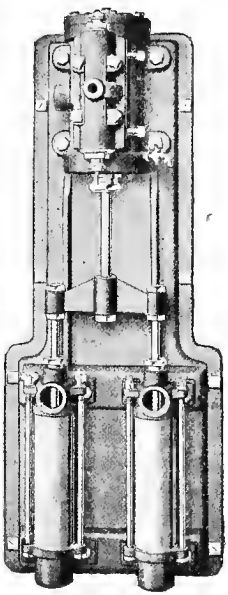
Creamery operators will appreciate the advantages offered by this independent steam pump over the ordinary plunger or rotary belt-driven machine, as it can be used when the engine is not running — occupies little space and can be located where most convenient—and can be regulated to deliver any required amount of liquid within its capacity, ranging from 25 to 1,200 gallons per hour.

Size, 2½ x 3½ x 2.

Price $50 00

"MARSH" DOUBLE CYLINDER

Designed especially for pumping New and Skimmed Milk in Skimming Stations



Without pulleys, shafting or belting. It is self-regulating in every way, and it is the cheapest and most economical device for the purpose yet offered.

The pump cylinders are nicely finished, and are constructed entirely of brass, the rods are connected by yoke to a 4x6 Marsh engine. Steam pipe ⅜ in., exhaust ¾ in.

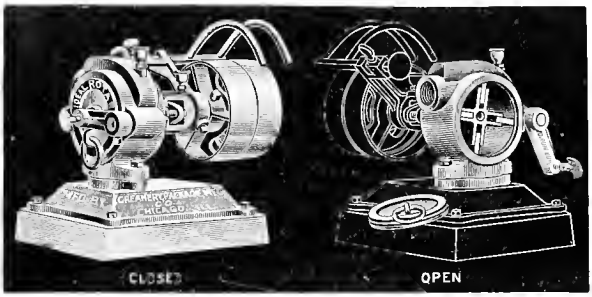
Cylinders and pistons are easily removed for cleaning.

The engine and pump cylinders are mounted upon a neat and substantial iron base plate, and can be fastened to post or side of wall.

PRICES

With 2½-inch Milk Cylinder $85 00
" 3- " " " 95 00

THE IDEAL ROTARY FORCE PUMP.



This pump is designed for pumping milk in factories, but is just as well adapted to the pumping of water. The cams are of solid brass. It is fitted with an easy working belt shifter, the check valve is of solid brass, so constructed that no leather is required, hence hot fluids can be run through it without injurious effect. A new feature in this Pump is an oil cup on the top of the cylinder through which the inner parts of the Pump may be lubricated to prevent wear if run without pumping.

Great care is taken to make this pump perfect in every part. It is so constructed that it can be taken apart in a few moments and is easily cleaned. The cuts show the Pump open and closed. It is made in three sizes, with a little greater capacity than other makes of Rotary Pumps.

SIZES AND PRICES.

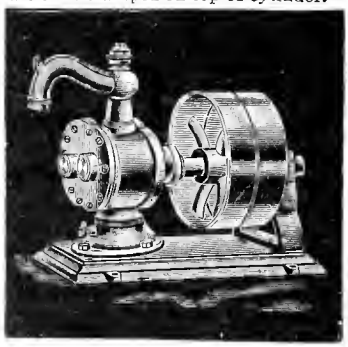
No. 1.....$27 00 No. 2.....$32 00 No. 3..... $38 00

EXTRAS FOR THE IDEAL PUMPS.

No. 8.	Base	$2 50		Dowels, per set	$0 20
No. 9.	Case	4 00	No. 11.	Stuffing Box Gland	25
No. 5.	Cap	1 25		Rubber Jacket	35
No. 7.	Spindle Support	1 25		Pulleys, per set	3 00
No. 10.	Belt Shifter Arm	75		Set Collar	15
	Belt Shifter	50		Oil Cups	80
	Head and Spindle	3 25		Bottom Valve, complete	1 50
	Cams, per set	2 00		One Poppet for Valve	50
	Springs, per set	20			

In Ordering Extras always give serial number of pump which is stamped on top of cylinder.

COMMON ROTARY FORCE PUMP.

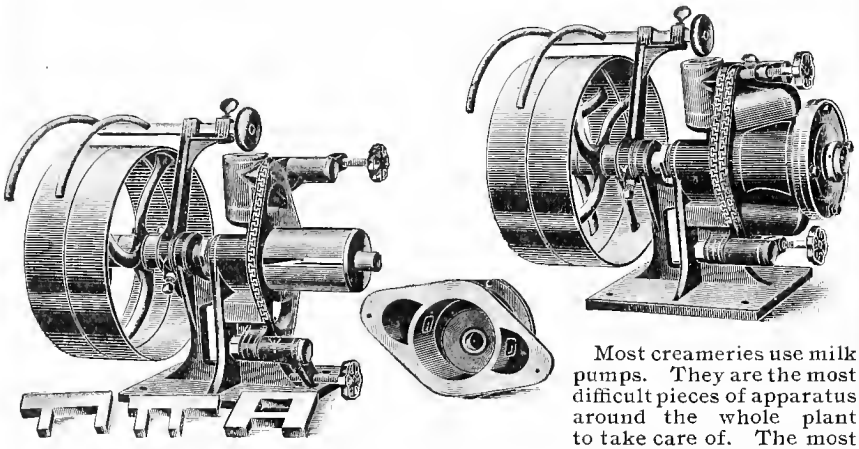


These Pumps are indespensable in a creamery, and for pumping milk and skimmed milk are first class. So much depends on them that they should be of the very best manufacture, exact and uniform in the work. We handle only the highest grades, because of the fact that nothing about a creamery causes more trouble than cheap and unreliable rotary pumps.

SIZES, DIMENSIONS AND PRICES.

Number.	Suction Pipe.	Discharge Pipe.	Size Pulleys.	At 100 Revolutions per Minute.	Price, Iron.
1	1¼ in.	1 in.	7 x 2½ in.	Dis. 13 gal.	$27 00
2	1¼ in.	1 in.	7 x 2½ in.	Dis. 14 gal.	32 00
3	1½ in.	1¼ in.	7 x 2½ in.	Dis. 17 gal.	38 00
4	1½ in.	1½ in.	11 x 3 in.	Dis. 27 gal.	48 00
5	2 in.	2 in.	11 x 3 in.	Dis. 36 gal.	54 00
6	3 in.	2½ in.	14½ x 4 in.	Dis. 55 gal.	65 00

THE SANITARY MILK PUMP.



Most creameries use milk pumps. They are the most difficult pieces of apparatus around the whole plant to take care of. The most faithful efforts are unavailing to keep them sweet and clean. They are an unavoidable nuisance.

The Sanitary Ideal is a cleanable Pump. By simply unscrewing two hand screws the entire head is removed. This releases the brass cams. When these are taken out there is no part of the pump but which can be easily gotten at with a brush.

This pump is made of solid cast steel. All parts carefully fitted. No springs to break or get out of order. No packing rings of any sort.

The cams are self-adjusting and automatic in operation.

Fitted with tight and loose pulleys of large diameter and adjustable belt shifter.

No.	Capacity.	Speed.	Connections.	Size of Pulleys	Price.
1	1 Separator.	150 revolutions per min.	1¼-inch	2 x 10-inch.	$27.00
2	2 to 3 "	150 " "	1¼-inch	2 x 10 "	32.00
3	3 to 5 "	150 " "	1½-inch	2 x 10 "	38.00

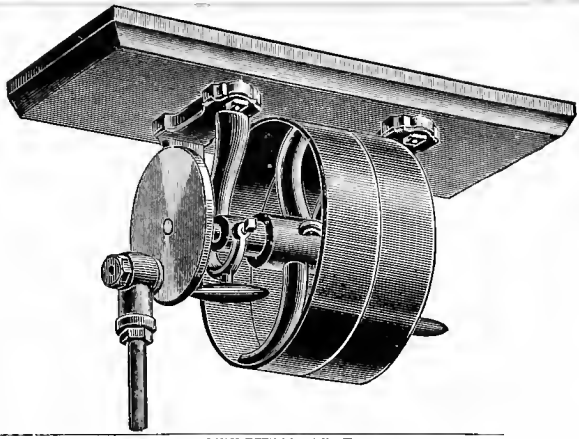
With priming attachment $2.00 extra.

EXTRAS FOR THE SANITARY PUMP.

Cylinder complete	each,	$9 40
Cylinder Case	"	6 00
" Plate	"	2 00
" " Bearing	"	1 20
" " Cap Screws	"	05
Cam Head and Shaft		8 50
Cams	complete set,	3 50
Cams Double	each,	1 50
" Single	"	1 00
Frame	"	8 75
Lock Bolt	"	50
" " Nut	"	10
" Arm	"	75
" " Screw Hand Wheel	"	40
Eye Bolt	"	20
" " Thumb Nut	"	15
Stuffing Box Nut	"	45
Pulleys, Tight and Loose	set,	3 60
Shaft Collar	each,	40
Belt Shifter, complete	"	2 25
" " Arm	"	1 25
" " Square Bar with Finger Arms and Handle	"	1 00
Priming Attachment	"	2 00
Check Valve	"	3 50

When ordering extras give size and serial number of pump.

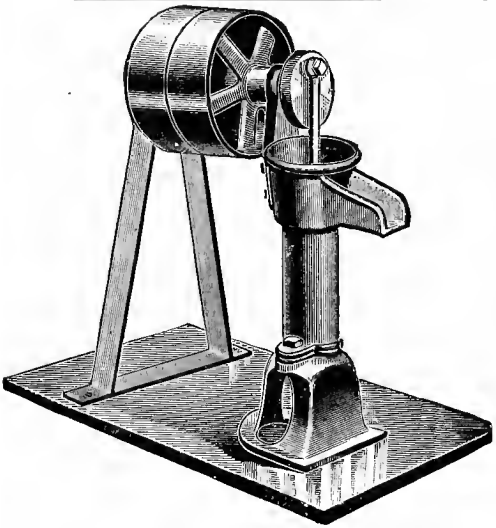
BELT PULLEY POWER PUMPING JACK



Counter shaft, with tight and loose pulleys, crank plate, stub rod connection and hangers. Made in two sizes. Can increase pulleys to 24x4 for large Jack and 16x3 for small Jack.

Eccentric for either size, each.....$2.00

Size Pulleys.	Shaft.	Hangers.	Price.
18x4	1 7-16	12 in. Drop.	$20 00
12x3	1 7-16	12 in. "	15 00
10x2	1 3-16	8 in. "	12 00



POWER PORCELAIN-LINED MILK PUMP

Our Porcelain-Lined Pitcher Pump is arranged to run by power. This pump will be found very convenient to raise the milk from the receiving vat to the tempering vat. If so desired we can attach another pump on opposite end to pump the skim milk at the same time.

PRICES

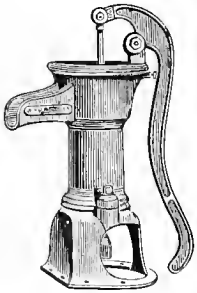
Single Pump, as above, complete.....$10 00
Double Pump, as above, complete..... 20 00

PATENT PORCELAIN-LINED PITCHER PUMP

With brass valve seat and revolving brake, bolt fastenings and cut-off base. Designed for pumping milk or buttermilk.

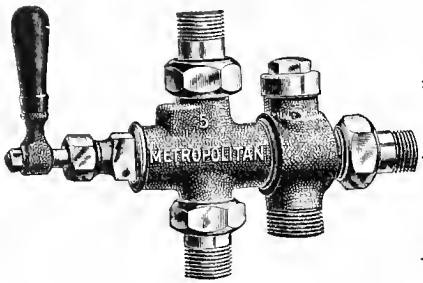
PRICES

No. 1,	2¼ inch bore,	¾ to 1	inch pipe	.....	$ 6 50
" 2,	3 "	1 " 1¼	"	.....	7 25
" 3,	3½ "	1¼ " 1½	"	.....	8 00
" 4,	4 "	1½	"	.....	9 00
" 5,	4½ "	2	"	.....	12 50



Open Spout.

INJECTORS

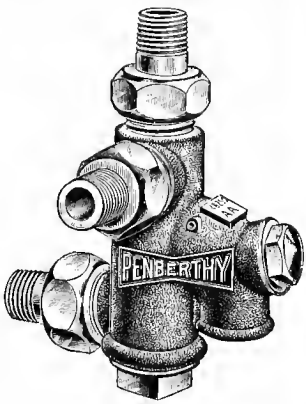


THE "METROPOLITAN" AUTOMATIC

Size	Size of Pipe Connections			Capacity with Steam Pres. 80 lbs. 2-foot Lift	Horse Power	Price
	St'm	Suc.	Del.			
2	3/8	3/8	3/8	60 gals.	4 to 6	$15 00
3	3/8	3/8	3/8	80 "	6 to 8	16 00
3½	½	½	½	120 "	8 to 15	18 00
4	½	½	½	165 "	15 to 20	20 00
5	¾	¾	¾	250 "	20 to 30	25 00
6	¾	¾	¾	350 "	30 to 45	30 00

THE PENBERTHY

Number	Size of pipe connections	Gallons per hour, 65 lb. pressure	Horse power	Price
OO	3/8	60	4 to 8	$16 00
A	½	85	8 to 12	18 00
AA	½	120	12 to 16	20 00
B	¾	220	16 to 28	25 00
BB	¾	300	28 to 40	30 00
C	1	430	40 to 57	40 00
CC	1	575	50 to 60	45 00
D	1¼	750	60 to 95	55 00



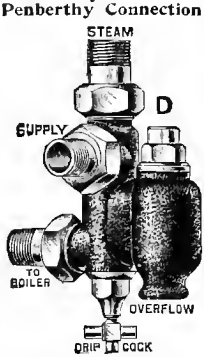
Style D Penberthy Connection

U. S. AUTOMATIC INJECTOR

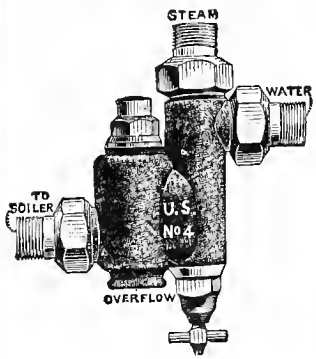
EFFICIENCY 100 PER CENT.

In regard to the economy of the U. S. Injector, that instrument shows an efficiency of 100 per cent, is ideally perfect, because no steam is wasted and all the heat, not employed in the thermodynamic operation of forcing water into the boiler, is saved by being returned to the boiler from which it issued.

Great Saving of Labor, Fuel, Water and Annoyance.



This style in stock in sizes Nos. 2, 3, 4 and 5.

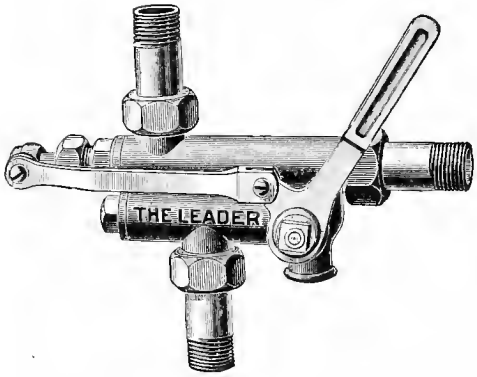


U. S. Injector.

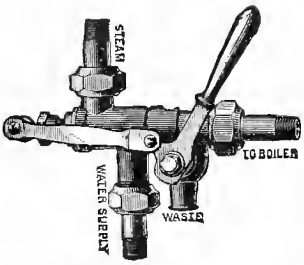
E	All Pipe Connect'ns	Capacity Gallons Per Hour. Max.	Min.	Horse Power.	Price.
00	¼ in.	36	15	1 to 4	$13 00
0	3/8 "	65	28	3 " 8	14 00
1	3/8 "	90	40	6 " 10	16 00
2	½ "	125	60	8 " 15	18 00
3	½ "	170	75	15 " 20	20 00
4	¾ "	250	125	20 " 30	25 00
5	¾ "	340	140	30 " 40	30 00
6	1 "	475	250	40 " 60	40 00
7	1 "	575	300	60 " 70	45 00
8	1¼ "	750	350	70 " 95	55 00

INJECTORS

"LEADER"



"EXCELSIOR"



PRICE LIST

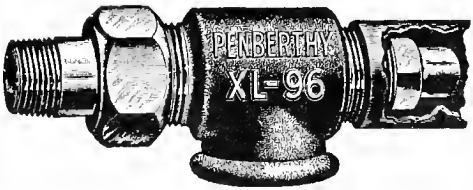
For Either of the Above Injectors

No. of Injector.	Size of Pipes.		Horse Power of Boiler, Will Feed.	Gallons per Hour, 60 lbs. Steam.	List Price.
	Steam Pipe.	Suction and Feed.			
1	⅜	⅜	3 to 7	60	$16 00
2	⅜	⅜	7 to 10	90	18 00
3	½	½	12 to 18	150	22 00
4	½	½	18 to 25	220	25 00
5	¾	¾	25 to 35	300	30 00
6	¾	¾	35 to 45	400	35 00
7	¾	1	45 to 60	500	40 00

We furnish repairs for all kinds of Injectors and Inspirators.

EJECTORS

THE "X-L"

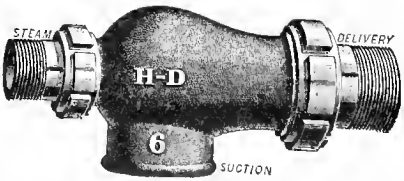


LIFTS WATER 20 TO 25 FEET
ELEVATES 30 TO 70 FEET

Size, Brass.	Steam Connection.	Suction and Delivery.	Capacity per Hour, 60 lbs. Steam.	Price, Each.	Price, Strainers, Each.
No. 1	⅜ in.	½ in.	250 Gal.	$8 00	$0 50
No. 2	½ in.	¾ in.	500 Gal.	10 00	75
No. 3	¾ in.	1 in.	960 Gal.	15 00	1 00
No. 4	1 in.	1¼ in.	1300 Gal.	20 00	1 25
No. 5	1 in.	1½ in.	2000 Gal.	25 00	1 50

THE "H-D"

Sizes, Brass	Pipe Con'ec'ns		Capacity per Hour.	Prices, Each.	Price, Strainers Each.
	Steam	Suction and Delivery.			
No. 1	⅜	½	250 gals.	$ 8 00	$0 90
No. 2	½	¾	500 gals.	10 00	1 00
No. 3	¾	1	960 gals.	15 00	1 25
No. 4	1	1¼	1300 gals.	20 00	1 50



JET PUMPS

THE "BLAKESLEE"

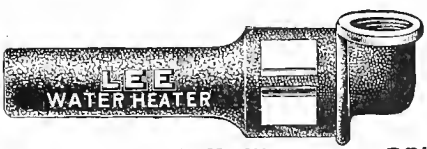
Designed for pumping water, buttermilk and other liquids.

PRICES OF PUMPS WITH BRASS FITTINGS

Size of Pump	Suction Pipe	Disch'ge Pipe	Steam Pipe	Capacity per min.	Price
¾ inch.....	¾ inch.	½ inch.	⅜ inch.	8 galls.	$ 8 00
1 "	1 "	¾ "	½ "	15 "	10 00
1¼ "	1¼ "	1 "	½ "	20 "	12 00
1½ "	1½ "	1¼ "	¾ "	30 "	14 00

Brass pumps will be furnished at an additional cost of 25 per cent.

NOISELESS WATER HEATERS



Cut No. 300.

THE LEE NOISELESS HEATER OR HOT WATER NOZZLE.

Made in five sizes for ⅜, ½, ¾, 1 and 1¼ inch steam pipe.

PRICES.

No. 1, Size ⅜ in. Steam Pipe.....$1 75 each.
" 2, " ½ in. " ..... 2 25 "
" 3, " ¾ in. " ..... 3 00 "
" 4, " 1 in. " ..... 4 00 "
" 5, " 1¼ in. " ..... 6 00 "

THE PENBERTHY

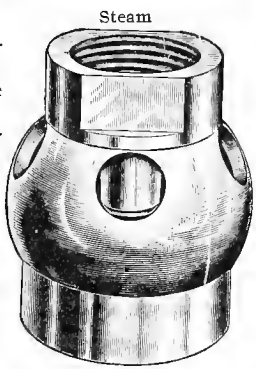
Made in three sizes for ½, ¾ and 1 inch pipe.

Size H, ½ inch, will heat 50 gallons of water at summer heat to 210° in 20 minutes with 70 lbs. of steam.

Size J, ¾ inch, will heat 50 gallons of water to same temperature in 15 minutes with 70 lbs. of steam.

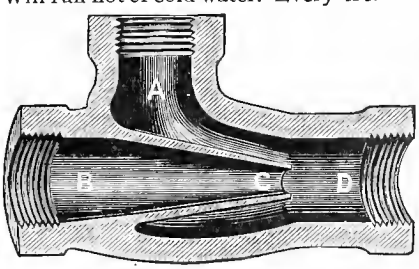
Size K, 1 inch, will heat 50 gallons of water to same temperature in 12 minutes with 70 lbs. of steam.

List size H, ½ inch.....each, $2 00
" " J, ¾ " ..... " 2 50
" " K, 1 " ..... " 3 00



THE McDANIEL'S

Will run hot or cold water. Every creamery should have one.



1 inch black.....$1 00
1¼ " " 1 25
1½ " " 1 50
2 " " 2 00

Galvanized, extra, each, 25 cts.

THE NEW 20th CENTURY

DE LAVAL "ALPHA" CREAM SEPARATORS

Mark Another Advance in the Process of Cream Separation.

The word De Laval has always been synonymous with progressive development. Every year has marked some new improvement or step of advancement bringing the "Alpha" De Laval machines still nearer to literal perfection. The latest material improvement has been the general adaptation to the "Alpha" disc system of the new Split-Wing Tubular Shaft invention, thus effecting more even and thorough distribution of the milk in the separating bowl than heretofore accomplished. This improvement effects generally every feature of separator practicability, affording considerably greater capacity with still more exhaustive thoroughness of separation—particularly under the harder conditions of heavy cream and low temperature, while the accompanying change in the bowl construction obviates all previous possibilities of clogging.

Hand in hand with this expansion and greater utilization of the "Alpha" disc system of separation various mechanical improvements and touches of betterment have been put into practice during the past few months, including a new method of bowl locking and unlocking which precludes the springing of bowl spindles and the throwing of bowls out of balance from careless or impractical handling in such connection, and new oiling arrangements which effect a material saving of oil heretofore wasted and render literally impossible the heating or setting of machines and the splattering of oil around them.

Everything that twenty years of experience in both Europe and America has yet been able to devise or suggest has now been done toward making the **Twentieth Century "Alpha" De Laval Separators** perfect for their purpose, and great as has been the universally conceded superiority of the De Laval machines heretofore the new standard is now raised still higher.

THE FOLLOWING FEATURES ARE MORE MARKED THAN EVER BEFORE:

The "Alpha" disc machines skim cleaner than other machines possibly can under any circumstances, and the harder the skimming conditions in any respect the greater the difference becomes.

The "Alpha" disk machines skim cleaner than any other separator at any temperature, and the lower the temperature the greater the difference becomes.

The capacities of the "Alpha" disc machines are actual and even conservative, while those of other machines are materially exaggerated with anything like normal speed and good skimming.

The "Alpha" disc machines require to run at but less than one-half the speed of other machines in proportion to diameter of bowl, and wear at least proportionately better.

The "Alpha" disc machines require but from one-third to one-half the power of other machines in proportion to capacity, and effect a consequent saving in fuel.

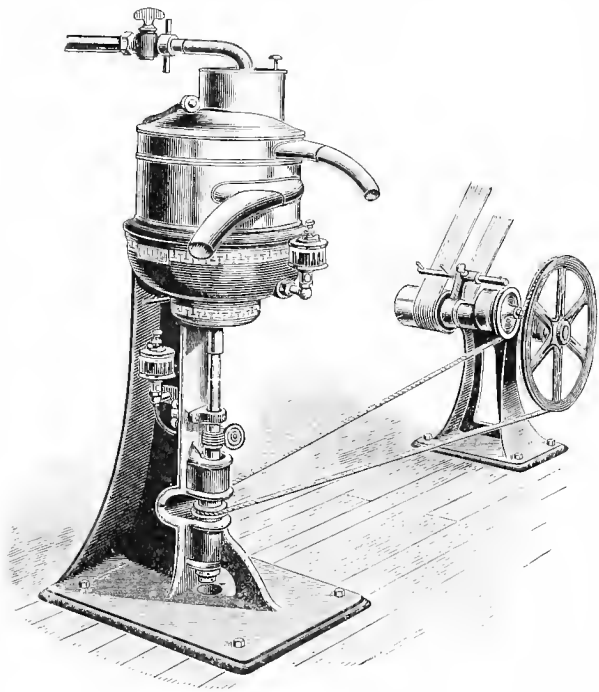
The "Alpha" disc machines produce a smoother and more evenly and completely churnable cream than other machines, and when desired a heavier cream than any other machine can successfully make.

The "Alpha" disc machines are simpler, more easily and thoroughly cleanable and better and more durably made than other machines.

In short, the "Alpha" disc machines save their cost in any creamery from once to twice over each year in what they do over and above the best that is possible with any other machines, while the saving in dairy use is proportionate to the amount of work done.

"ALPHA" ACME DE LAVAL CREAM SEPARATOR

BELT POWER



"ALPHA" OR "DISC" BOWL TYPE

SPECIFICATIONS

Height to Milk Faucet	3 ft. 4 in.
" " bottom of Skimmed Milk Spout	2 " 2 "
" " " " Cream Spout	2 " 4 "
Shipping Weight (Bowl, Frame and Jack)	484 lbs.
" " (" only)	44 "
Speed of Bowl, revolutions per minute	5,600
Diameter of Rope Wheel on Jack	16½ in.
" " T. & L. Pulleys on Jack	5 "
Face " " " "	3 "
Speed of Jack, revolutions per minute	915
Horse Power to run	¾
Weight of Jack	124 lbs.

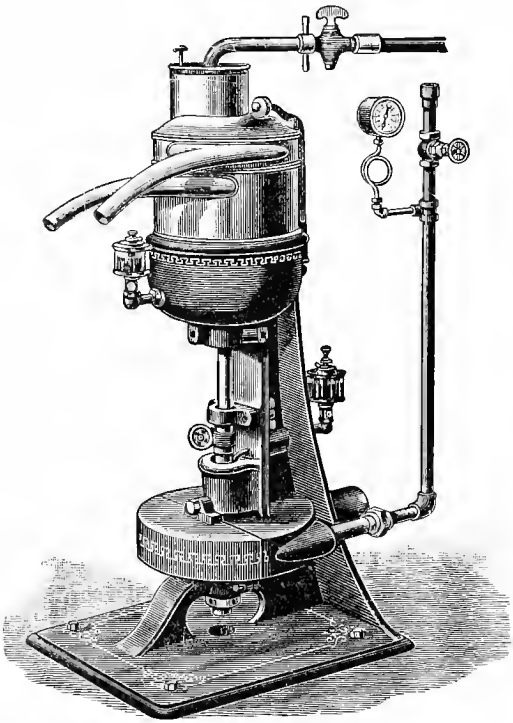
Actual Capacity, 1,750 pounds per hour

PRICE, $350.00

The "Acme" is much the smallest, lightest and most compact of any power separator, requiring but a three-quarter power, and being capable of operation by any kind of small power.

"ALPHA" ACME DE LAVAL CREAM SEPARATOR

THE NEW "TOOTH-WHEEL" STEAM TURBINE



"ALPHA" OR "DISC" BOWL TYPE

SPECIFICATIONS

Height to Milk Faucet	3 ft. 6 in.
" " bottom of Skimmed Milk Spout	2 " 4 "
" " " " Cream Spout	2 " 6 "
Shipping weight (Bowl and Frame)	426 lbs.
" " (Bowl only)	44 "
Speed of Bowl, revolutions per minute	5600
Actual number of lbs. of steam to run	25

Actual Capacity, 1,750 pounds per hour.

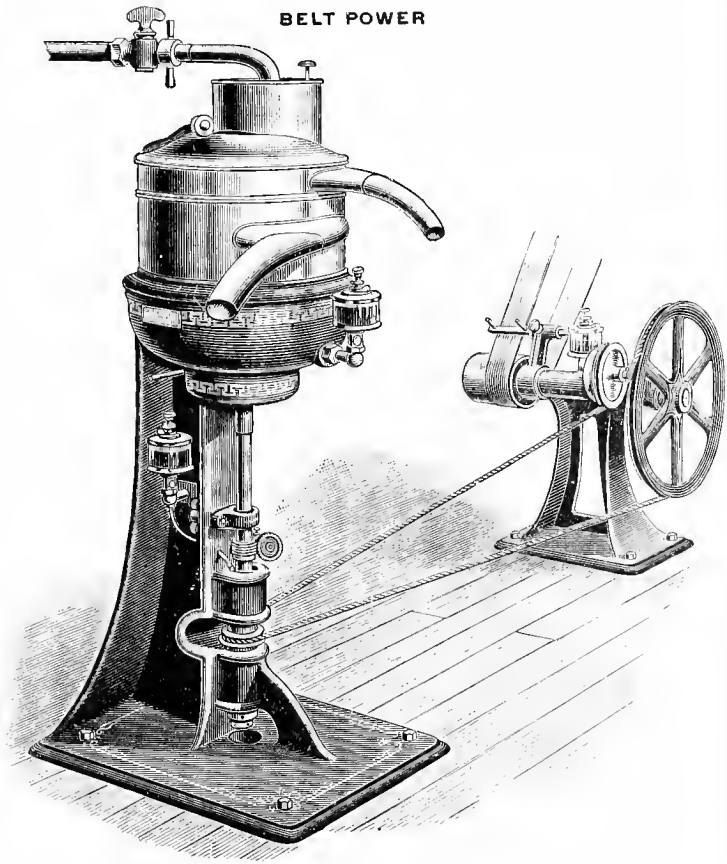
PRICE, $375.00

An Ideal Machine for Skimming Stations.

The Turbine Separator is operated by direct steam connections with the boiler. The Acme is the simplest, most accessible, most durable, and most easily handled of any turbine separator made.

"ALPHA" No. 1, DE LAVAL CREAM SEPARATOR

BELT POWER



"ALPHA" OR "DISC" BOWL TYPE

SPECIFICATIONS

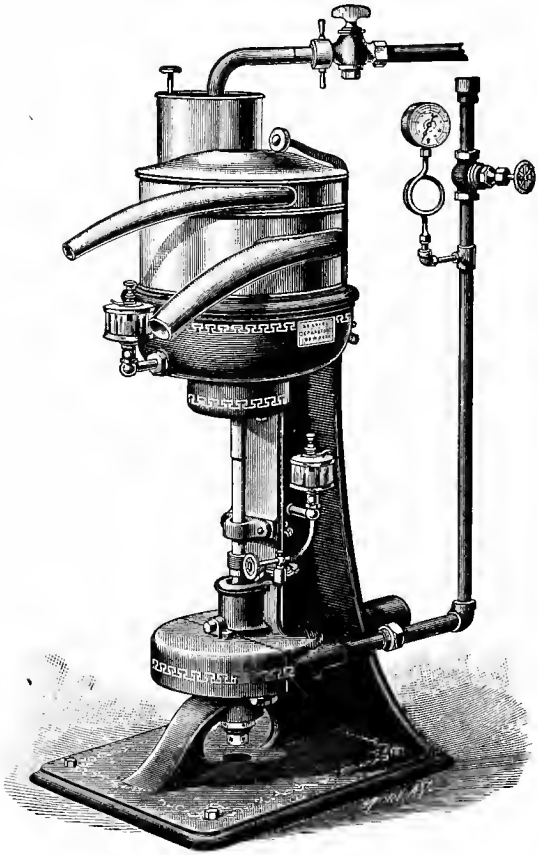
	Alpha No. 1	Alpha No. 2
Height to Milk Faucet	4 ft. 2 in.	4 ft. 6 in.
" " bottom of Skimmed Milk Spout	2 ft. 8 in.	3 ft.
" " " " Cream Spout	3 ft. 1 in.	3 ft. 4 in.
Shipping weight (Bowl and Frame)	733 lbs.	758 lbs.
" " (" only)	99 lbs.	124 lbs.
Speed of Bowl, revolutions per minute	5,600	5,600
Diameter of Rope Pulley on Jack	16½ in.	16½ in.
" " T. & L. Pulleys on Jack	5 in.	5 in.
Face of T. & L. Pulleys on Jack	3 in.	3 in.
Speed of Jack, revolutions per minute	915	915
Horse Power to run	1	1½
Weight of Jack	124 lbs.	124 lbs.

PRICE

"Alpha" No. 1—Belt Power, actual capacity, 3,000 lbs. per hour $500.00
" " 2 " " " 4,500 " " 750.00

"ALPHA" No. 1, DE LAVAL CREAM SEPARATOR

THE NEW "TOOTH-WHEEL" STEAM TURBINE



"ALPHA" OR "DISC" BOWL TYPE

SPECIFICATIONS

	Alpha No. 1	Alpha No. 2
Height to Milk Faucet	4 ft. 2 in.	4 ft. 6 in.
" " bottom of Skimmed Milk Spout	2 " 8 "	3 " 0 "
" " " Cream Spout	3 " 1 "	3 " 4 "
Shipping weight (Bowl and Frame)	604 lbs.	639 lbs.
" " (Bowl only)	99 "	124 "
Speed of Bowl, revolutions per minute	5,600	5,600
Approximate number of lbs. of steam to run	30 to 35	35 to 40

"Alpha No. 1, Actual Capacity, 3,000 lbs. per hour. Price $525 00
" No. 2. " " 4,500 " " " " 800 00

EXTRAS AND SUPPLIES FOR

"Alpha" Acme De Laval Belt-power Separators

Net Price List of Parts.

NAME.	No	PRICE.
Bowl Plates or Discs for machines above 7026A:		
Top Disc	1000	$0.60
Intermediate Disc, plain	1001	.50
Intermediate Disc, caulked	1002	.60
Bottom Disc	1003	.75
Tubular Shaft	1004	7.50
Bowl Wrench for Notched Bowl	1005	1.50
Locking Bolt	1007	1.35
Spindle Shield	1008	.75
Bowl Plates or Discs for machine above 120,100:		
Caulked Disc	194	.70
Plain Disc	195	.60
Bottom Disc, Notched for Bowl Ribs	196	.70
Tubular Shaft, attached bottom cup style	192	5.00
Disc Wing (and rivets)	193	.50
Bowl Plates or Discs for machines below 30,670:		
Top Disc	165	.60
Intermediate Discs	166	.50
Tubular Shaft	163	4.00
Disc Wing (and Rivets)	164	.60
Bowl Ring	167	.20
Bowl Top Wrench	170	.75
Bottom Wrench	191	.75
Bottom Screw, complete		1.25
Bottom Screw Step	181	.75
Bottom Screw Nut	60	.50
Bottom Screw Claw	61	.25
Cream Screw, for Bowl	158	.15
Cream Screw Wrench	168	.15
Covers, complete set		10.00
Top (or Regulating) Cover	186	3.50
Regulating Float	522	.75
Feed Regulating Pin	75	.50
Feed Pin Ring	76	.05
Cream Cover	187	3.00
Skim Milk Cover	188	4.00
Cover Arm, complete	152	1.25
Cover Arm Nut, separately	153	.15
Cover Arm Washer, separately	8	.05
Cover Arm Ring, separately	154	.10
Faucet	155	2.50
Guard, for Bowl Spindle	3	.75
Screws for Spindle Guard, each	4	.15
Holding Down (or Lag) Screws for base of frame, each	5	.05
Rubber Base Cushions (and Cap), each	90	.25
Lower Spindle (and Point)	177	1.50
Steel Points, per dozen	180	1.00
Steel Point, separately	180	.10
Spindle Pulley (and pin)	178	2.25
Taper Pin, separately	179	.15
Spindle Head (threaded for speed indicator)	331	1.35
Spindle Head, old style, (not threaded)	45	1.25
Upper Bushing, for lower spindle, (bronze)	54	1.50
Lower Bushing, for lower spindle, (bronze)	55	1.00
Bushing Extractor, complete	62	.75

NAME.	No.	PRICE.
Lubricators:		
Sight Feed Cup, complete except arms	110	2.50
Front Lubricator Arm (and Tube)	108	1.25
Back Lubricator Arm	230	1.25
Nut for Lubricator Arms	345	.15
Arm for High Back Lubricator (110) (and Tube) Feeding Top Bearing	103A	1.25
Arm for High Back Lubricator (110) (and Tube) Feeding Lower Spindle	103B	1.50
Cup Glass, separately	354	.75
Cup Cork Washer, separately	356	.15
Sight Feed Piece (and Glass), separately	358	.75
Small Sight Feed Glass, separately	259	.05
Brass Top Oil Cup, old style	184	1.25
Brass Side Oil Cup, old style	183	1.75
Side Oil Cup Feed Screw, separately	70	.15
Screws for fastening Brass Oil Cups	72	.05
Wick Wires (and Wicks), per dozen	68	.25
Siphon (for Bowl)	190	1.00
Speed Indicator, complete		2.50
Clamp	29	.25
Clamp Screw	288	.10
Wheel and Post	30	1.50
Post Screw	30d	.05
Sleeve for Bowl Spindle, old style use of indicator	28	.75
Sleeve Screw, separately	321	.05
Top Bearing, (phosphor bronze)	171	2.00
Top Bearing, second size	172	2.00
Top Bearing, third size	173	2.00
Top Bearing Plate	175	1.50
Bearing Plate Screws, each	176	.10
Rubber Bearing Ring	174	.10
Tube Cleaner, for bowl tubes	169	.15
Bowl Clamp (for Wrench 392)	395	1.75
Brush for Cover Spouts	526	.15
Bowl Spanner Wrench (two handles)	392	1.50
Top Bearing (Radial Spring style)	400	7.50
Set Screw for above Bearing	41	.10
Exchange of new Bearing complete for worn Bearing complete (expressage to be prepaid on return of old Bearing		3.75

INTERMEDIATE—NEW STYLE.

Belt-Shifter Bracket	285	1.25
Bracket Screw	286	.10
Belt-Shifter Arm (and rods)	294	1.00
Belt-Shifter Screw	288	.10
Bronze Bushing, driving fit	272	1.25
Bronze Bushing, loose fit	292	1.25
Set Screw, for loose bushing	479	.10
Holding-Down (or Lag) Screws, each	5	.05
Large Rope Wheel	277	5.00
Rope Wheel Key	279	.10
Loose Belt Pulley	282	2.50
Shaft	278	2.50
Shaft Collar	283	.75
Shaft Collar Screw, separately	284	.10
Spring Cotter	276	.05
Tight Belt Pulley	280	2.50
Tight Belt Pulley Screw, separately	281	.10
Tight Belt Pulley Screw Wrench	291	.25
Tightener Arm and Spindle	273	2.50
Tightener Pulley	274	2.00
Key for Pulley	308	.25

INTERMEDIATE—OLD STYLE.

NAME.	No.	PRICE.
Bearing Cap	297	1.25
Bearing Cap Screws, each	113	.15
Clutch Fork	306	1.25
Clutch Hand Nut	307	.50
Flat Belt Pulley	301	5.00
Friction Cone	303	2.00
Friction Leather	302	.75
Holding-Down (or Lag) Screws, each	5	.05
Large Rope Wheel	277	7.50
Rope Wheel Key	279	.10
Shaft	298	5.00
Shaft Collar	299	.50
Shaft Collar Pin	300	.10
Spring	305	.25
Threaded Shaft Collar, each	304	.75
Hook Wrench, for threaded shaft collar	61	.25

SEPARATOR SPOUT BRUSHES.

These brushes are made especially for us from selected stock. There is as much difference in brushes as any other manufactured goods. The bristles are tightly woven into the twisted wire handle and are held firmly in place. They will not mat down or pull out. Each brush is carefully inspected and guaranteed perfect in every respect. Our spout brushes will be found convenient and durable. Give them a trial.

Price.....each, $0 25

EXTRAS AND SUPPLIES FOR

"Alpha" Acme De Laval Turbine Separators.

Differing from Belt Machine.

Net Price List of Parts.

NAME.	No.	PRICE.
Pin for locking Bolt	1054	.05
Bottom-Screw Step	59	2.00
Set Tread Wheels	57p	1.50
Tread-Wheel Shaft, separately	58	.35
Cap Screw, for fastening frame sections and motor cap	113	.10
Lower Spindle (and Point)	227	1.50
Steel Point, separately	56	.25
Lower Bushing, for steam wheel spindle	344	1.00
Brass Oil Cup, for Step and Tread Wheels	124	1.25
Pet Cock	228	.35
Steam Gauge	132	6.35
Steam Gauge Siphon, separately	131	1.35
Pressure Regulator, governing steam pressure	133	12.50
Steam Wheel	139	20.00
Steam Nozzle, for Steam Wheel	140	1.35
Set Screw, for Steam Nozzle	346	.15
Outside Steam Connections, complete set	130	4.00
Exhaust Connection	142	1.00
Top Bearing (Spring style), complete	229	4.00
Repair Size, No. 2 Top Bearing	229	4.00
Repair Size, No. 3 Top Bearing	229	4.00
Bearing Set Screws, each	225	.15
Top Bearing Plate, Spring style	222	1.25
Bearing Plate Screws, each	226	.10
Tube Cleaner, for Bowl Tubes	169	.15
Wrench, large one (for both styles machine)	129	1.00
Wrench, small one (for old style machine)	125	.50
Claw Wrench (for Motor Screws)	406	.35

Parts for 1895 Steam-Flyer Acme Turbine Machines, differing from the Steam-Wheel Turbine Parts.

NAME.	No.	PRICE
Flyer (including Spindle)	117	$17.50
Flyer Spindle, separately	134	1.25
Flyer Pin, separately	118	.10
Flyer Spindle Bushing	135	3.00
Spindle Head	45	1.25
Steam Nozzle	126	3.00
Set Screw (and Nut), for Steam Nozzle	127	.25
Steam Connection Sleeve	128	4.00
Step Wheel (and Shaft)	120	13.00
Step Wheel Shaft Bushings, each	122	1.00
Set Screw for Shaft Bushings	123	.10
Top Bearing, Rubber Ring Style	171	2.00
Top Bearing, second size	172	2.00
Top Bearing, third size	173	2.00
Top Bearing Plate	175	1.50
Bearing Plate Screws, each	176	.10
Rubber Bearing Ring	174	.10

EXTRAS AND SUPPLIES FOR

"Alpha" No. 1 De Laval Belt-power Separators

Net Price List of Parts.

NAME.	No.	PRICE.
Belt-Tightener (on frame, old style), complete		$2.50
Pulley and Spindle	63	1.50
Bracket	64	.75
Hand Nut	65	.35
Frame Stud	66	.25
Leather Washer	67	.10
Bottom-Screw, complete		4.00
Bottom-Screw Step	59	2.00
Bottom-Screw Nut	60	.50
Bottom-Screw Wrench	61	.25
Set Tread Wheels and Shaft	366	1.50
Tread-Wheel Shaft, separately	58	.25
Bowl Plates or Discs, 2,500 lbs. capacity style; (note carefully various styles)		
Top Disc, plain for stripped disc bowl	362	.75
Intermediate Disc	410	.60
Intermediate Disc, with strips calked on	415	.60
Intermediate Disc, plain	416	.60
Intermediate Discs, with long strips, each	363	.60
Intermediate Discs, with short stripes, each	412	.60
Bottom Disc, plain, for calked or indented discs	401	.75
Bottom Disc (shaft-attached-cup style of bowl) with long strips	375	.75
Bottom Disc (ditto style), with short strips	413	.75
Bottom Enclosed Disc (old style shaft bowl), with strips	364	1.50
Disc Strips, long size, each	365	.05
Disc Strips, short size, each	414	.05
Vertical Ribs, for bowl sides	366	.25
Tubular Shaft, 3,000 lbs. capacity	1062	12.50
Tubular Shaft (with attached bottom cup)	374	7.50
Tubular Shaft Disc Wing (and Rivets), for No. 374 Shaft	347	.75
Tubular Shaft (without attached bottom cup)	311	5.00
Tubular Shaft Disc Wing (and Rivets), for No. 311 Shaft	312	.75
Clamp for Tubular Shaft	309	.50
Top Disc, with indentations	313	.75
Intermediate Discs, with indentations, each	314	.60
Bottom Enclosed Disc, indented disc style of bowl with outside ribs	367	1.50
Bottom Enclosed Disc, indented disc style of bowl without outside ribs	325	1.50
Bowl Plates or Discs, 3,000 lbs. capacity:		
Top Disc	1058	.75
Intermediate Disc, plain	1059	.60
Intermediate Disc, calked	1060	.75
Bottom Disc	1061	1.00
Bowl Plates or Discs, 2,000 lbs. capacity style: (See foot note on Increasing Capacity).		
Top Disc	21	.60
Intermediate Discs, each	22	.50
Tubular Shaft	19	7.50
Disc Wing (with rivets)	20	.75
Bowl Wrench	1052	1.75
Bowl Locking Bolt	1053	1.05
Bowl Locking Pin	1054	.10

NAME.	No.	PRICE
Bowl Wrenches:		
Spanner, or Handle Wrench, new style	339	2.00
Clamp, or Bottom Wrench, new style	337	1.75
Plain Spanner, top one	26	1.50
Plain Top Spanner, for notched bowl-top	343	1.50
Plain Spanner, bottom one	319	1.50
Cream-Screw, for bowl	13	.25
Cream-Screw Wrench	24	.25
Covers, complete set		15.00
Top (or Regulating) Cover (3,000 lbs. capacity)	1066	5.00
Top (or Regulating) Cover (2,500 lbs. capacity)	74	5.00
Top (or Regulating) Cover (2,000 lbs. capacity)	353	5.00
Regulating Float	73	.75
Cover Regulating Pin	75	.50
Cover Pin Ring	76	.05
Cream-Cover	77	3.50
Skim-Milk Cover	78	7.50
Cover Arm, complete	6	1.50
Cover Arm Nut, separately	7	.15
Cover Arm Washer, separately	8	.05
Cover Arm Ring	9	.10
Faucet	10	4.00
Guard, for bowl spindle	3	.75
Screws, for spindle guard, each	4	.15
Holding-Down (or Lag) Screws, for base of frame, each	5	.05
Rubber Base Cushions (and Cap), each	90	.25
Lower Spindle (and point)	46	1.50
Steel Point separately	56	.25
Spindle Head (threaded for speed-indicator)	331	1.35
Spindle Head (plain, old style)	45	1.25
Spindle Pulley (and pin)	178	2.25
Pulley Pin, separately	179	.15
Ratchet Pulley, complete, old style	47	3.50
Ratchet Pulley Pin	51	.15
Ratchet Pulley Spring	52	.10
Upper Bushing (Ph. Bronze)	54	1.50
Lower Bushing (Ph. Bronze)	55	1.00
Bushing Extractor, complete	62	.75
Lubricators (various styles):		
Sight-Feed Cup, complete, except arm	110	2.50
Front Lubricator Arm (and tube)	108	1.25
Side Lubricator Arm (and tube)	109	1.25
Nut for Lubricator Arms	345	.15
Cup (110) Glass, separately	354	.75
Cup Cork-Washer (104 and 110 cups), separately	356	.15
Sight-Feed Piece (and glass), (110 cup), separately	358	.75
Small Sight-Feed Glass (104 and 110 cups), separately	359	.05
Oil Catcher	1048	1.00
Lubricator Cup, complete, for high back brackets	104	2.50
High Back Bracket (and tube) feeding top bearing	103A	1.25
High Back Bracket (and tube) feeding lower spindle	103B	1.50
Cup (104) Glass, separately	355	.75
Sight-Feed Piece (and glass), (104 cup), separately	357	.75
Brass Top Oil-Cup, old style	71	1.50
Brass Side Oil-Cup	69	1.75
Side Oil-Cup Feed Screw, separately	70	.15
Oil-Cup Fastening Screws, each	72	.05
Wick Wires (and Wicks) per doz.	68	.25
Rubber Rings:		
Bowl Ring, small size	23S	.25
Bowl Ring, large size	23L	.25
Bearing Ring, for sectional bearing	89	.35
Bearing Ring (for Nos. 31 and 85 bearings)	42	.35
Bearing Ring (for No. 80 bearing)	81	.25

NAME.	No.	PRICE.
Siphon, for bowl	27	1.00
Speed-Indicator, complete		2.00
Clamp	29	.25
Clamp Screw	288	.10
Wheel and Post	30	1.65
Post Screw	30D	.05
Spindle Shield	1057	.75
Sleeve (for bowl spindle), old style, use of indicator	28	.75
Sleeve Screw, separately	321	.05
Top Bearing, radial spring, complete with plate	376	15.00
Top Bearing, plate separately	382	1.25
Top Bearing, No. 2 repair size	376-2	15.00
Top Bearing, No. 3 repair size	376-3	15.00
Sectional Bearing (with ring)	88	5.00
Sectional Bearing, second size (with ring)	88-No. 2	5.00
Sectional Bearing, third size (with ring)	88-No. 3	5.00
Bearing Plate (31, 85 and 88 bearings)	43	1.35
Bearing Plate Screws (all bearings), each	44	.10
Bearing Disc (31, 85 and 88 bearings)	40	1.00
Bearing Disc Screws, for above, each	41	.10
Solid Bronze Bearing, large spindle	85	4.00
Solid Bronze Bearing, second size	86	4.00
Solid Bronze Bearing, third size	87	4.00
Solid Bronze Bearing, small spindle	80	4.00
Small Solid Bronze Bearing, second size	80-No. 2	4.00
Small Solid Bronze Bearing, third size	80-No. 3	4.00
Bearing Plate (No. 80 bearing)	83	1.25
Bearing Disc (No. 80 bearing plate)	82	1.00
Bearing Disc Screws, for above, each	691	.10
Ball Bearing, complete	31	7.50
Steel Balls, separately, each	35	.05
Tube Cleaner, for Bowl Tubes	25	.25
Tread Wheels, each	57	.75
Tread Wheels, shaft	58	.35

INTERMEDIATE—NEW STYLE.

Belt-Shifter Bracket	285	1.25
Bracket Screw	286	.10
Belt-Shifter Arm (and rods)	294	1.00
Belt-Shifter Screw	288	.10
Bronze Bushing, driving fit	272	1.25
Bronze Bushing, loose fit	292	1.25
Set Screw, for loose bushing	479	.10
Holding-Down (or Lag) Screws, each	5	.05
Large Rope Wheel	277	5.00
Rope Wheel Key	279	.10
Loose Belt Pulley	282	2.50
Shaft	278	2.50
Shaft Collar	283	.75
Shaft Collar Screw, separately	284	.10
Spring Cotter	276	.05
Tight Belt Pulley	280	2.50
Tight Belt Pulley Screw, separately	281	.10
Tight Belt Pulley Screw Wrench	291	.25
Tightener Arm and Spindle	273	2.50
Tightener Pulley	274	2.00
Key for Pulley	308	.25

INTERMEDIATE—OLD STYLE.

NAME.	No.	PRICE.
Bearing Cap	297	$1.25
Bearing Cap Screws, each	113	.15
Clutch Fork	306	1.25
Clutch Hand Nut	307	.50
Flat Belt Pulley	301	5.00
Friction Cone	303	2.00
Friction Leather	302	.75
Holding-Down (or Lag) Screws, each	5	.05
Large Rope Wheel	277	7.50
Rope Wheel Key	279	.10
Shaft	298	5.00
Shaft Collar	299	.50
Shaft Collar Pin	300	.10
Spring	305	.25
Threaded Shaft Collar, each	304	.75
Hook Wrench, for threaded shaft collar	61	.25

Alpha No. 2 Belt.

Parts Differing from Alpha No. I Belt Only.

NAME.	No.	PRICE.
Brass Top Oil-Cup, old style	97	$1.50
Faucet	92	5.00
Ph. Bronze Top Bearing (1891 and 1892 machines)	99	4.00
Second (or Repair) Size of such bearing	105	4.00
Third (or Repair) Size of such bearing	106	4.00
Bearing Plate, for 99 bearing only	101	1.35
Bearing Disc, for 99 bearing only	102	1.00
Bearing Ring, for 99 bearing only	100	.30
Top (or Regulating Cover (4,000 lbs. capacity)	1065	5.00
Top (or Regulating) Cover (4,000 lbs. capacity)	98	5.00
Top (or Regulating) Cover (3,500 lbs. capacity)	361	5.00
Tubular Shaft, 4,000 lbs. capacity	1064	15.00
Tubular Shaft, with attached bottom cup	425	10.00
Disc Wing (and Rivets)	269	.75
Vertical Ribs on Inside of Bowl	426	.50
Tubular Shaft, 4,000 lbs. capacity bowl	315	7.50
Disc Wing (and rivets), for No. 315 Shaft	316	.75
Tubular Shaft, 3,500 lbs. capacity bowl	95	10.00
Disc Wing (and rivets)	96	.75

EXTRAS AND SUPPLIES FOR

"Alpha" No. 1 De Laval Turbine Separators.

Differing from Belt Machine.

Net Price List of Parts.

NAME.	No.	PRICE.
Bottom Disc, plain, (for shaft-attached-cup style of bowl, with indented discs)	401	$ .75
Clamp for lifting out Bowl	399	.50
Brass Oil Cup, for motor parts	124	.25
Oil Siphon for Bottom Screw	1049	.75
Steam Connections, outside piping, complete set	130	4.00
Steam Gauge (and Siphon)	132	6.35
Steam Gauge Siphon, separately	131	1.35
Pressure Regulator, governing steam pressure	133	12.50
Exhaust Connection	142	1.00

Steam-Wheel Motor Parts Differing from Steam-Flyer Motor Parts.

NAME.	No.	PRICE
Steam-Wheel (with spindle, etc.) complete	385	$21.50
Steam-Wheel, separately	386	20.00
Steam-Wheel Sleeve Bushing	387	1.00
Steam-Wheel Collar	388	.50
Steam-Wheel Collar Hook Wrench	411	.35
Steam-Wheel Set Screw	389	.10
Steam-Wheel Spindle (and point)	390	1.50
Steel Point, separately	56	.25
Spindle Head	331	1.35
Upper Bushing	54	1.50
Lower Bushing	344	1.00
Bushing Extractor, complete	62	.75
Bottom-Screw, complete, including tread-wheels		4.00
Bottom Screw Step	348	2.00
Bottom-Screw Nut	60	.50
Bottom-Screw Hook Wrench	61	.25
Set Tread Wheels and Shaft	351	1.50
Tread-Wheel Shaft, separately	350	.35
Steam-Nozzle	140	1.35
Steam-Nozzle Set Screw	346	.15
Cap Screw, for Motor Casing, each	113	.10
Claw Wrench, for cap screws	406	.35

Steam-Flyer Motor Parts Differing from Steam-Wheel Motor Parts.

NAME.	No.	PRICE.
Steam-Flyer (including spindle)	117	$17.50
Flyer-Spindle, separately	134	1.25
Flyer Pin, separately	118	.10
Flyer Spindle Bushing	135	3.00
Spindle Head (threaded for speed indicator)	331	1.35
Spindle Head (without speed indicator threads)	45	1.25
Flyer (including spindle), old style, short spindle	149	17.50
Flyer Spindle, short style	115	1.25
Flyer Spindle Bushing, short style	116	3.00
Spindle Head (for No. 115 short spindle)	114	1.25
Step Wheel (and Shaft)	120	13.00
Step Wheel Shaft Bushings, each	122	1.00
Set Screw for Shaft Bushings	123	.10
Steam Nozzle	126	3.00
Set Screw (and nut for Steam Nozzle)	127	.25
Steam Connection Sleeve	128	4.00
Cap Screws, for fastening frame sections	113	.10
Wrench, large one	129	1.00
Wrench, small one	125	.50

Alpha No. 2 Turbine.

(Parts Differing from Alpha No. 1 Turbine Only.)

NAME.	No.	PRICE.
Brass Top Oil Cup, old style	97	$1.50
Faucet	92	5.00
Ph. Bronze Top Bearing (1891 and 1892 machines)	99	4.00
Second (or Repair) Size of such bearing	105	4.00
Third (or Repair) Size of such bearing	106	4.00
Bearing Plate, for 99 bearing only	101	1.38
Bearing Disc, for 99 bearing only	102	1.00
Bearing Ring, for 99 bearing only	100	.30
Top (or Regulating) Cover (4,000 lbs. capacity)	1065	5.00
Tubular Shaft, 4,000 lbs. capacity	1064	15.00
Top (or Regulating) Cover, (4,000 lbs. capacity)	98	5.00
Top (or Regulating) Cover, (3,500 lbs. capacity)	361	5.00
Tubular Shaft, 4,000 lbs. capacity bowl	315	7.50
Disc Wing (and Rivets)	316	.75
Tubular Shaft, 3,500 lbs. capacity bowl	95	10.00
Disc Wing (and Rivets)	96	.75

EXTRAS AND SUPPLIES FOR

"STANDARD" DE LAVAL BELT-POWER SEPARATORS

NET PRICE LIST OF PARTS

Name.	No.	Price.
Spindle Guard	3	$ .75
Spindle Guard Screws (each)	4	.15
Lag Screws (each)	5	.05
Cover Arm (complete)	231	1.25
" " Nut	232	.10
" " Ring	154	.10
Faucet	233	1.75
Skimmed Milk Screw	236	.25
Milk Tube Cleaner	260	.20
Bowl Siphon	27	1.00
Speed Indicator Sleeve	28	.85
" " " Clamp and Screw	29	.30
" " " Dial and Post	30	1.35
Top Bearing, No. 1 (regular size)	171	1.25
" " No. 2 (reduced size)	172	1.25
" " No. 3 (further reduced size)	173	1.25
" " Ring (per doz.)	174	1.00
Wicks and Wires (per doz.)	68	.25
Side Oil Cup	69	1.75
Top " "	254	1.25
Covers (complete set)	—	10.00
Top Cover	256	2.00
Cream Cover	257	4.00
Skimmed Milk Cover	258	4.00
Lower Spindle "A" (wooden cup style) and Point	242	1.50
Wooden Cups (for "A" Spindle) (per doz.)	243	.75
Lower Spindle "B" (iron cup style) and Point	244	1.50
" " "C" (screw style) " "	245	1.75
Spindle Pulley and Pin (for "A" and "B" spindles)	178	2.25
" " Pin (separately	179	.15
" " (for "C" spindle)	246	2.25
" " Wrench for "C" Spindle	247	.50
Upper Bushing	54	.75
Lower "	55	.50
Steel Points (per doz.)	180	1.00
Bottom Screw	261	.75
" " Lock Nut	182	.50
" " Hook Wrench	61	.25
Bushing Extractor (complete)	62	.75
Belt Tightener (complete)	—	2.50
INTERMEDIATE—OLD STYLE		
Lag Screws (each)	5	.10
Bearing Cap	297	1.00
" " Screw (separately)	113	.10
Shaft	298	3.00
Shaft Collar	299	.50
" " Pin (separately)	300	.10
Large Rope Wheel	277	7.50
" " " Key	279	.10
Flat Belt Pulley	301	5.00
Friction Leather	302	.75
" Cone	303	2.00
Threaded Shaft Collar	304	.50
Spring	305	.25
Clutch Fork	306	1.25
" " Hand Nut	307	.50

When ordering Bearings and Bearing Rings please advise size or number of Bearing or Ring wanted, also give size of Spindle and number of times Spindle has been turned down.

EXTRAS AND SUPPLIES FOR

"STANDARD" DE LAVAL STEAM TURBINE SEPARATORS

NET PRICE LIST OF PARTS

Name.	No.	Price.
Cap Screws (for fastening frame sections together), each	113	$ .10
Covers, complete set	—	10.00
Top Cover	256	2.00
Cream Cover	257	4.00
Skimmed-milk Cover	258	4.00
Cover Arm, complete	231	1.25
Cover Arm Nut, separately	232	.10
Cover Arm Ring	154	.10
Faucet	233	1.75
Flyer (including Spindle), long spindle style	117	17.50
Long Flyer Spindle, separately	134	1.25
Flyer Pin, separately	118	.10
Long Flyer Spindle Bushing	135	3.00
Long Spindle Head	45	1.25
Flyer (including Spindle), old style, short spindle	149	17.50
Flyer Spindle, short style	115	1.25
Flyer Spindle Bushing, short style	116	3.00
Spindle Head (for No. 115 short spindle)	114	1.25
Guard, for bowl spindle	3	.75
Screws, for spindle guard, each	4	.15
Holding-Down (or Lag) Screws, for base of frame, each	5	.05
Oil Cup, top one	254	1.25
Oil Cup, side one	69	1.75
Oil Cup, for step-wheel	124	1.25
Screws for Oil Cups, each	72	.05
Wick Wires (and Wicks), per doz	68	.25
Siphon, for bowl	27	1.00
Skimmed-milk Screw	236	.25
Skimmed-milk Tube Cleaner	260	.20
Speed Indicator, complete	—	2.50
Clamp	29	.25
Clamp Screw	288	.10
Wheel and Post	30	1.50
Post Screw	30d	.05
Sleeve (for bowl spindle)	28	.75
Sleeve Screw, separately	321	.05
Steam Gauge (and Siphon)	132	6.35
Steam Gauge Siphon, separately	131	1.35
Pressure Regulator, governing steam pressure	133	12.50
Steam Nozzle	126	3.00
Set Screw (and nut) for Steam Nozzle	127	.25
Steam Connection Sleeve	128	4.00
Outside Steam Connections, complete set	130	4.00
Exhaust Connection	142	1.00
Step-wheel and Shaft (small shaft)	120 and 267	13.00
Step-wheel and Shaft (large shaft)	120 and 121	13.00
Step-wheel Shaft Bushings (for shaft 267), each	268	1.00
Step-wheel Shaft Bushings (for shaft 121), each	122	1.00
Set Screw for Bushings	123	.15
Top Bearing, No. 1 (regular size)	171	1.25
Top Bearing, No. 2 (reduced size)	172	1.25
Top Bearing No. 3 (further reduced size)	173	1.25
Top Bearing Ring, per doz	174	1.00
Wrench, large one	129	1.00
Wrench, small one	125	.50

When ordering Bearings and Bearing Rings please advise size or number of Bearing or Ring wanted, also give size of Spindle and number of times Spindle has been turned down.

EXTRAS FOR

"REID'S IMPROVED" DANISH-WESTON SEPARATOR

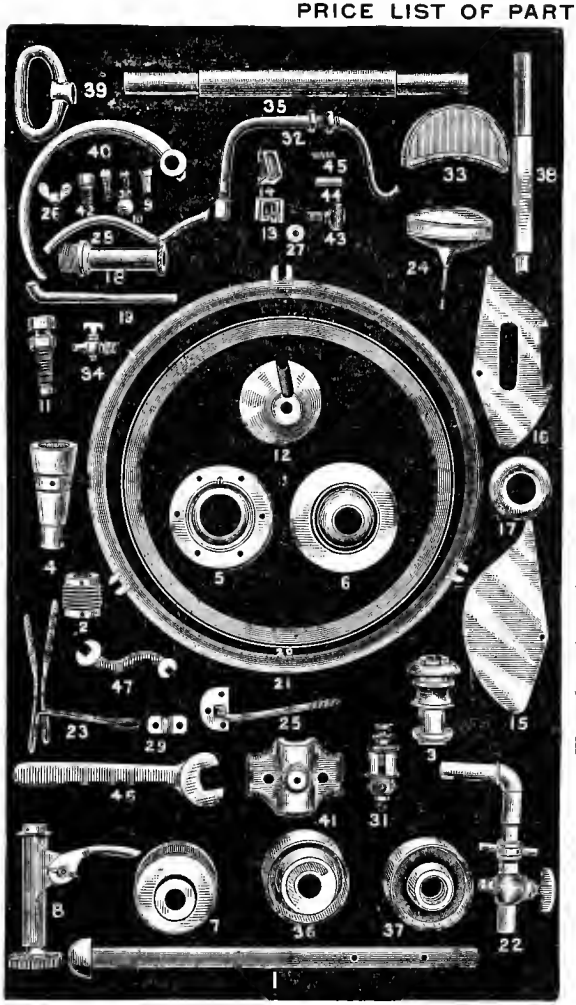
NET PRICE LIST OF PARTS

1	Base			
2	Guard			
3	Cylinder			
4	Iron Cover	$4 00	Iron Cover, complete	$10 00
5	" Arm with Yoke Plates	5 25		
6	B. H. Wing Bolt for Arm	25		
7	H. H. Bolt for Arm	25		
8	Milk Tube Stop	25		
9	Bottom Cream Cover	3 50	Cream Cover, complete	5 10
10	Top " "	1 50		
11	Small " " Cap	10		
12	B. H. Cover, Screw and Nut, each			05
13	Faucet			2 00
14	Skimmed Milk Tube			3 75
15	" " " Bend			75
16	Milk Point			30
17	" Tube, Adjusting Nut			1 50
18	Screw for Milk Tube			50
19	Spindle			7 00
20	" Pulley	$1 40	Spindle Pulley, complete	1 70
21	" " Set Screw, each	10		
22	" Ball			10
23	Oil Catcher			70
24	Upper Bearing	$4 50	Upper Bearing, complete	5 50
25	" " Nut	1 00		
26	Lower Bearing	1 90	Lower Bearing, complete	2 50
27	" " Plug	60		
28	Base Plug			50
29	" " Nut			50
30	Oil Cup	$0 60	Oil Cup and Pipes	1 25
31	" " Cover	20		
32	Short Oil Cup Nipple	07		
33	Long " " "	12		
34	Oil Cup Tee	06		
35	" " Plug	20		
36	Cone Nut			7 50
37	" " Rubber Ring, per doz			1 00
38	" " Wrench			50
39	" " " Lever			50
40	Half Spanner Hexagon Wrench			50
41	S. Wrench			50
42	Tee "			75
43	Upper Bearing Nut Wrench			50
44	Speed Indicator Frame	$0 85	Speed Indicator, complete	1 50
45	" " Wheel	50		
46	" " Shaft	10		
47	" " Spring	05		
48	" " " Staple			

	Belt Tightener, complete	$4 00	59	Intermediate Shaft	1 50
49	" " Bracket	75	60	" Shaft Collar	50
50	" " Stud	20	61	" Driving Pulley	3 65
51	" " Nut	40	62	" Tight "	1 60
52	" " Pulley	1 80	63	" Loose "	1 60
53	" " " Spindle	20	64	" Shifter Bar	50
54	Belt Tightener Pulley Spindle Ball	—	65	" " " Stop	10
55	Belt Tightener Oil Pipe	25	66	" " " Set Screw	05
56	Large Tube Cleaner	30	67	" Shifter Bracket	1 10
57	Small " "	25	68	" " " Bolt	10
58	Intermediate Frame	—	69	Belt Tightener Plate and Stud	60

EXTRAS FOR "JUMBO" SEPARATOR

PRICE LIST OF PARTS.



No. 40, Jack Shifter Prongs	$0 75
41, Jack Stand Cap....	1 00
42, Jack Cup Screw....	10
43, Jack Thumb Screw	10
44, Jack Clutch Pin....	05
45, Jack Clutch Spring	15
46, Single Open End Wrench	20
47, Double Open End Wrench	40
48, Feed Pan on Covers	2 50
49, Upper Cover Ring, No. 1 or No. 2.....	3 00
50, Upper Cover Ring, No. 3.....	2 00
51, Spanner Wrench, each.....	35
52, Upper Box Wrench	1 50
53, Spindle Collar.....	2 50
54, Notched Feed Regulator	1 00
No. 55, Cleaning Screw....	$0 15
56, Milk Screw	50
57, Cream Screw.....	50
58, Cone Screw L. H...	35
59, Glass for Oiler on Jack	20
60, Hoop for Bowl.....	1 50
61, Feed Tube and Brace, old style...	1 00
62, Skimmed-Milk Tube	1 50
63, Lock Nut.....	25
64, Feed Pan Cushion.	15
65, Jack Stands.....	10 00
66, Top Covers with Rings	4 50
67, Middle Covers.....	4 00
68, Lower Covers.....	4 00
69, Base or Foundation Plate	7 50

We make a charge for use of "Jumbo" Loaning Bowls.

Jack, complete.....	$50 00
No. 1, Spindle	15 00
3, Upper Box.....	7 00
4, Lower Box.....	5 00
5, Upper Box Flange, plain	2 00
5, B—Upper Box Screw Flange	2 50
6, Upper Box Oil Cover..	50
7, Flange Pulley, old style.....	2 50
7, B—Flange Pulley, new style.	3 50
7, C—Flange Pulley Bushing, new style..	75
7, D—Spindle Pulley Wrench, new style, set.	70
8, Speed Indicator, machine complete... ..	5 00
9, Steel Point.....	20
10, Steel Balls.....	15
10, B—Steel Bushing.....	20
11, Adjusting Screw, complete	1 50
11, B—Adjusting Screw only.....	1 00
11, C—Adjusting Screw Lock Nut only..	50
12, Worm Bowl Box, old style....	5 00
12, B—Cone Bowl Box ...	12 00
13, Cream Gate.....	2 00
14, Milk Gate	2 00
15, Wing.....	1 50
15, B—Wing Brace.....	50
17, Rubber Ring.....	50
18, Feed Cup, in Bowl....	2 50
19, Feed Tube.....	50
20, Lower Cover Ring....	2 25
20, B—Middle Cover Ring	2 25
21, Upper Cover Ring...	3 25
22, Feed Cock or Faucet..	1 25
23, Feed Cock Bracket....	50
24, Feed Cock Float.....	75
25, Cover Lugs, per full set.	1 50
26, Cover Lug Thumb Nut	15
27, Cover Lug Washer....	05
28, Oil Drip.....	35
29, Oil Drip Clamp.....	15
30, Machine Screw.	05
31, Sight Feed Oil Cup....	1 25
32, Oil Tube.....	1 50
33, Drip Cup.....	50
34, Drip Cock.....	60
35, Jack Shaft	1 00
36, Jack Tight Pulley.....	3 00
37, Jack Loose Pulley	4 00
37, B—Jack Flange Pulley	8 00
38, Jack Shifter, complete	2 50
39, Jack Shifter Handle .	75

INDICATOR EXTRAS.

OLD STYLE.

No. 70, Worm.....	$0 75
71, Worm Gear.....	1 00
72, Shaft and Dial.....	1 00
73, Bracket	1 25
74, Lug.....	50

INDICATOR EXTRAS.

NEW STYLE.

75, Worm Gear	$1 25
76, Shaft.....	50
77, Dial	75
78, Bracket.....	1 00
79, Frame.....	1 50
Balancing Bowl.....	5 00
Retinning Bowl.....	4 00
Screw Driver.....	50
Tube Cleaner.....	25
Oil Can.....	35

EXTRAS FOR "OLD STYLE"

DANISH-WESTON CREAM SEPARATOR

NET PRICE LIST OF PARTS

FIFTEEN-INCH MACHINE

No.		Price.
1	Cream tube complete	$3 50
2	" " bend	60
3	Milk tube	3 75
4	" " bend	75
5	Cream point	30
5½	Milk "	30
6	Feed pipe, complete	1 80
7	Screw for milk pipe	1 50
8	Milk pipe holder	2 00
9	Screw for feed pipe	50
10	Plug for oiler	50
11	Nuts for cream tubes	75
12	Oil catcher	70
13	Oil pipe and cup	$1 25
14	Spindle Pulley	1 40
15	Upper bearing	5 50
16	Lower "	2 50
17	Milk cock, with stand	4 00
18	Speed indicator	6 50
19	" " bolt	50
20	Spindle nut	2 00
21	Spindle	7 00
22	T wrench	75
23	Hexagon wrench	1 20
24	Feed pipe only	75
25	Oil cup glasses, each	40

EXTRAS FOR "BARBER'S OVERFLOW"

DANISH-WESTON CREAM SEPARATOR

NET PRICE LIST OF PARTS

No.		Price.
1	Faucet	$1 75
2	" arm	1 50
4	Cream cover	5 00
5	Milk cover	5 00
7	Speed indicator clamp and screw	35
8	" " and post	1 35
10	Top ring for frame	1 50
11	Milk distributor, brass	4 00
12	" " wrench	50
14	Spindle for bowl	7 50
16	Upper bearing for spindle	4 50
17	Nut for upper bearing	$1 00
19	Lower bushing for spindle	2 50
20	Ball for lower bushing	10
21	Steel plate for lower bushing	15
22	Steel ring " " "	25
24	Pulley for spindle	1 50
26	Cream screw	50
27	Wrench for cream screw	25
29	Oil pipe and cup	1 25
30	Rubber packing ring	25

EXTRAS FOR

DANISH-WESTON INTERMEDIATES (Any Style)

NET PRICE LIST OF PARTS

	Price.
22 inch pulley	$ 1 35
8 " " per set	3 20
Shifters	3 10
Hangers, per set	5 10
Foundation bolts	3 75

In ordering intermediate extras for Danish-Weston style machine, state whether for "Old Style," "Barber Overflow" or "Reid's Improved" machine.

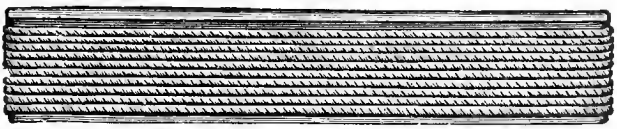
We can also furnish complete Extras for the following Separators, all styles

Sharples Imperial Russian
" Standard Russian
" Imperial Belt
" Standard Belt

Sharples Motor
Empire No. 10
Empire No. 25
United States

SEPARATOR BELTS

DE LAVAL AND SHARPLES ROPE BELTS



These are thoroughly well made and are guaranteed to outlast any rope belt made. Stock lengths, 14 ft., 17 ft. 4 in., 17 ft. 7 in., 17 ft. 9 in.

Stock lengths, any length. Price.....each, 80c. doz., $8 50
Odd lengths made in dozen lots only. Price.....per doz., 9 00

DANISH-WESTON SEPARATOR BELTS

WACH'S SPECIAL RAWHIDE

After considerable experimenting we have found a separator belt which is durable, gives eminent satisfaction, and which we can thoroughly recommend.

Sizes and Prices

1½ inch, per foot.....16c net
2 " " .....19c "
2½ " " .....24c "

LIGHT DOUBLE LEATHER (Edges sewed)

An extra fine quality belt

2 inch, per foot.....22½c net
2½ " " .....29c "

ENDLESS FLAT RAWHIDE SEPARATOR BELTS

For "Jumbo," "United States" and "Reid Overflow" Separators.

17 ft. 6 in. x 1¼ in., "Jumbo".....each, $2 00
18 ft. x 1¼ in., " ....." 2 00
18 ft. x 1½ in., " ....." 2 50
18 ft. 6 in. x 1¼ in., " ....." 2 00
18 ft. 2 in. x 1½ in., " ....." 2 25
18 ft. 6 in. x 1½ in., "United States"....." 2 25
19 ft. 6 in. x 1½ in., "Reid Overflow"....." 3 00

PERFECTION FLAT SEINE COTTON BELTS

For "Reid Overflow," and "Old Style" Danish-Weston, "United States," Alexandria" and "Jumbo" Separators.

☞**The Point is** the lighter the belt the less strain on your spindle.

The difference between Flat and Rope Belts

Our 1-inch flat belt presents its full width to surface of pulley and weighs only 9-16 lb.; whereas, the standard size rope belt, namely, ⅜-inch, presents only ¼-inch surface to pulley, and weighs ¾ lb.

Belt running over pulleys of small diameter at high speed ought to be as thin and wide as possible.

19 ft. 6 in. x 1½ in., "Reid Overflow".....each, $2 50
13 ft. x 2½ in., "Old Style" Danish Weston, (25 in. machine)....." 3 00
18 ft. 2 in. x 1½ in., "United States"....." 2 25
17 ft. x 1¼ in., No. 1 "Alexandria"....." 2 50
17 ft. x 1 in., No. 2 " ....." 2 00
17 ft. x ¾ in., No. 3 " ....." 1 75
17 ft. 6 in. x 1¼ in., "Jumbo"....." 2 00
18 ft. x 1¼ in., " ....." 2 00
18 ft. x 1½ in., " ....." 2 50
18 ft. 6 in. x 1¼ in., " ....." 2 00

HANDY TOOLS

"HEXAGON" POCKET LEVEL

NICKEL PLATED

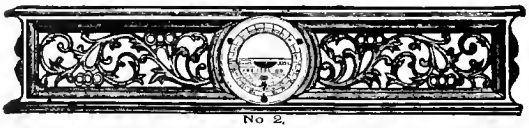
An indispensable article for creamerymen. Can be used to advantage for leveling separators, separator bowls, separator jacks, shafting, etc.

Separator Bowls should be leveled often

PRICE

No. 000. 3½ inches long.....each, $0 40

IRON LEVEL AND PLUMB



No 2.

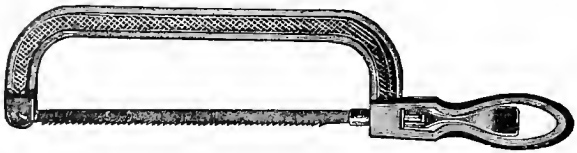
This is a very handy article about a factory, and especially designed for those doing their own carpenter work, as it embodies two tools in one.

SIZES AND PRICES

No. 1. 6 inches long, ornamented iron.....each, $2 00
" 2. 12 " " " " ..... " 2 50

"GRIFFIN'S" HACK SAW

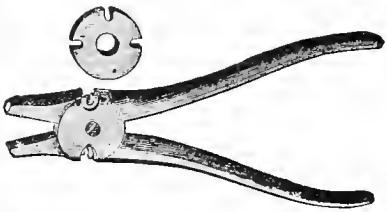
JAPANNED FRAME



For sawing metal, such as separator spindles, shafting, etc. A very handy tool about a factory. Each saw complete with one dozen blades.

PRICE

10-inch blade.....each, $1 50



"ACME" COMBINED PLIERS AND WIRE CUTTERS

SOLID STEEL WITH REMOVABLE CUTTERS

This tool will be found very handy to factorymen.

SIZES AND PRICES

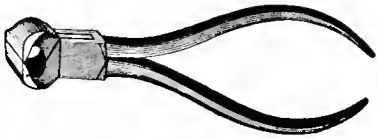
Inches long	6	8	10
Cuts wire not larger than No	11	8	6
Each	$1 00	$1 25	$2 00

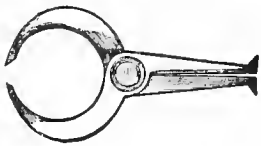
SOLID STEEL END-CUTTING NIPPERS

No factoryman's kit of tools is complete without a pair of good nippers. We handle the best.

SIZES AND PRICES

No.	140	150
Inches long	5	6
Each	$0 75	$1 00





DOUBLE CALIPERS

CAST STEEL, POLISHED

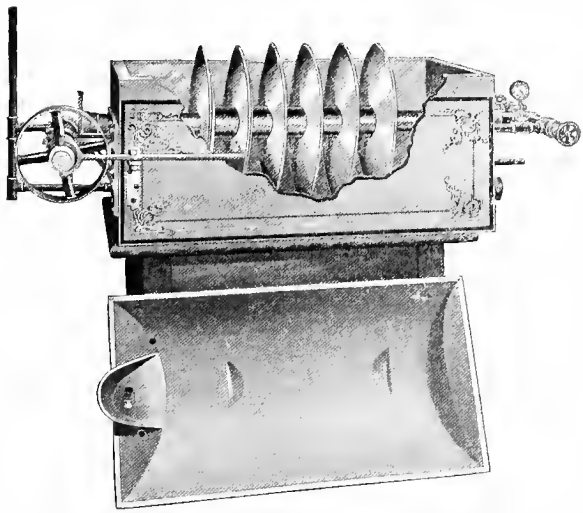
One end for measuring inside diameters, and one end for measuring outside diameters. All factorymen will appreciate this handy little article.

SIZES AND PRICES

Inches long	3	4	5	6
Each	$0 30	$0 40	$0 50	$0 60

MILK HEATERS.

THE TWENTIETH CENTURY DISC HEATER.



In the constrction of this heater we have sought to overcome the objectionable features of all milk heaters in use at the present time. The problem presented seems simple, and yet it has baffled the efforts of manufacturers in this line for a long time.

The 20th Century Disc Heater delivers the milk at a uniform temperature under any conditions, either of milk or climate. The milk flows into the heater vat at the bottom on the opposite end from which the steam is admitted to the system of discs. As the milk rises and flows through the heater it comes in contact with each disc in turn. Each disc in the system, as the steam inlet is approached, is hotter than the last. The milk is gradually heated until, when it reaches the last disc and is drawn off from the top at the delivery end, it is heated to just the desired temperature. The vat is double jacketed so that the climate can not easily affect the milk while in the heater.

The temperature can be perfectly controlled by using more or less steam. There is absolutely no danger of cooking the milk with this heater, The special construction of the disc prevents the live steam from coming in contact with the heating surfaces. By the distribution of the heat through the disc system, the entire heating energy of the steam is perfectly utilized.

To insure the complete separation of milk, in winter especially, the milk must be heated uniformly. This we guarantee the 20th Century Disc Heater to accomplish. This feature alone will save its price over any other heater on the market in a short time.

This heater has large capacity and can be easily cared for as it is open and all parts can be easily cleaned.

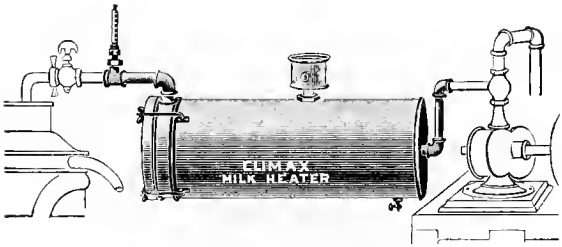
SIZES AND PRICES.

No. 1,	4 Disc,	capacity	1 separator	$ 60 00
No. 2,	8 "	"	2 separators	75 00
No. 3,	10 "	"	4 "	100 00
No. 4,	12 "	"	5 "	140 00

Price does not include stand or table to support heater.

MILK HEATERS.

THE CLIMAX.



The invention of this implement came from a demand by creamerymen for something better than the common tempering vat for heating milk up to the required temperature for the separator.

It is known that where milk flows into the separator, if it has been thoroughly and evenly heated, better results are obtained, than where it is allowed to run in partially and unevenly heated—the latter causing the skim milk to test more or less butter fat, which defect is always laid to the separator.

In construction, the inside cylinder is a removable one, being held in place by bolts and thumb nuts, and set away from the outside cylinder to form a space for a thin sheet of milk between the outside and inside cylinder. The milk is delivered into this place and spreads out into a thin sheet or layer, so as to be evenly and thoroughly heated.

The inside cylinder may be easily and quickly removed, permitting the ready and thorough cleansing of all surfaces with which the milk comes in contact.

In order to effect the rapid and thorough heating of milk, two things are essential, the milk must be distributed in a thin sheet or layer, and the heating medium must be caused to circulate, otherwise there will not be that even distribution of heat.

The outer cylinder is filled with water and steam applied to its entire length, heating the water and thus heating the thin sheet of milk. No steam comes in contact with the milk, as this has been found quite objectionable, especially where foul water and boiler compounds are used.

The Heater may be used in connection with a rotary pump, or direct from the receiving vat.

Very little steam is required for its use, generally ¼ to ½ turn of the half-inch valve is found sufficient.

The heater may be attached to a rotary pump, as shown in cut, or connected direct to the vat, where the gravity system is used.

SIZES AND PRICES.

No. 0.	Capacity,	500 lbs. milk per hour	$14 00
No. 1.	"	2,000 " " "	15 00
No. 2.	"	3,500 " " "	18 00
No. 3.	"	6,000 " " "	20 00
No. 4.	"	8,000 " " "	25 00

THE "IDEAL."

Price, complete ..... each, $10 00

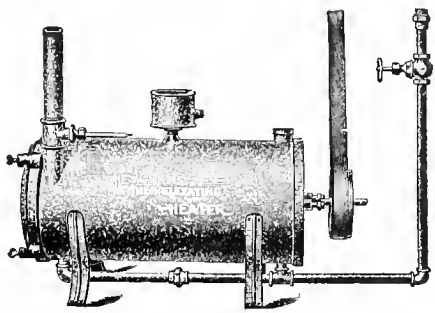
THE "LARKEY."

Price, complete ..... each, $15 00

MILK HEATERS.

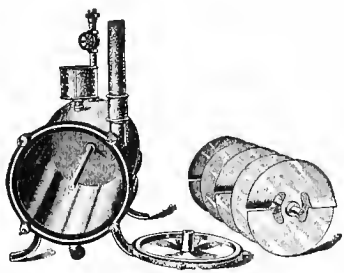
THE CURTIS ELEVATING.

The cost of a satisfactory heater together with a pump necessary for elevating has been so high that we believe there is a demand for a simple device in one machine. With this in mind we have devised and perfected the heater shown in the accompanying cuts.



CUT NO. 1.

Cut No. 1 shows the exterior with belt attachment, thermometer and the milk inlet. This heater is designed to set on the floor and will elevate to the separator.



CUT NO. 3.

Cut No. 2 shows the interior and the elevating device. The space between the outside galvanized iron jacket and the inside tin jacket permits water and steam for heating purposes; no steam coming in contact with the milk.

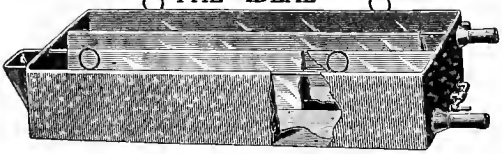
The elevating device is easily removed for cleaning. We follow closely the principle of the original Curtis Milk Heater, which has become so popular.

SIZES AND PRICES.

No. 1 capacity for one separator	$25.00
No. 2 capacity for two separators	30.00
No. 3 capacity for three separators	35.00
No. 4 capacity for four separators	40.00

TEMPERING VATS

THE "IDEAL"



This Vat is made of galvanized iron outside and heavy tin inside. It is divided into compartments and has water space in partitions at the bottom and sides. It is furnished with steam and water connections and outlet for two separators. A noiseless water heater is attached, which prevents noise and gives a perfect circulation.

They are made in three sizes.

SIZES AND PRICES

39 in. long,	24 in. wide,	9 in. deep		$12 00
70 "	35 "	8 "		20 00
34 "	18 "	6 "	Fitted for 1 separator	7 50
34 "	18 "	6 "	Fitted for 2 separators	8 00

The "Wood Jacketed," price each.....$15.00

HEATER VAT GOVERNOR

These Governors are very convenient for regulating the supply of milk in the different styles of heater vats. They are automatic and need no watching.

Price, complete with ball, faucet and pipe connections.....$4 00

SEPARATOR CREAM COOLERS

THE "BAIR"

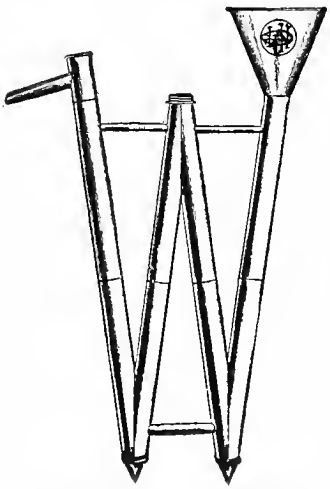
It consists of a hollow pan made of tin, the cream flowing over the upper surface, and the cold water under it, over the lower surface. As the space between is divided into sections by cross straps, the water flows back and forth until it reaches the exit at the upper end. The cream flows into the vat at the same temperature as the water. It gives excellent satisfaction.

SIZES AND PRICES

6 foot	$8 00	10 foot	$10 00
8 "	9 00	12 "	12 00

MADE FROM TINNED COPPER

6 foot	$15 00	10 foot	$25 00
8 "	20 00	12 "	30 00



THE "IDEAL."

For a cheap, effective and simple Cream Cooler the "Ideal" cannot be surpassed. It is placed in a common water-tight barrel containing ice and water. When no ice is at hand a continuous stream of cold water may be kept running into the barrel and thus bring the temperature of the cream which runs through the pipe of the Cooler down to the proper temperature. It is so made that it can be cleaned very easily, having screw taps securely packed with cork, fitted on each joint. These can be removed, leaving the Cooler open so that each length can be cleaned thoroughly. This Cooler can be used advantageously in connection with a high separator on the same elevation as the vat.

PRICES

Cooler complete with 1 wire handle brush	$5 00
Extra brushes, each	50

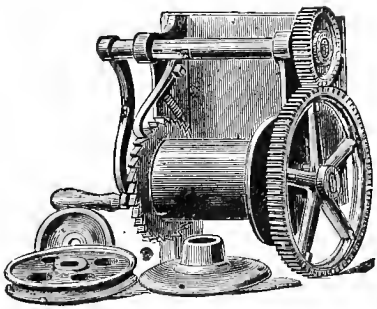
HOISTING CRANE IRONS

FOR HANDLING CREAM AND MILK CANS

The accompanying cut shows the details of our hoisting crane irons, complete, as we ship them out. The engraving shows the cranes and the iron socket in which the upright timber revolves, and the grooved wheels which the ropes pass over.

Hoisting crane irons complete, consisting of two shafts, four journal boxes, two geared wheels, one crank, two grooved pulleys. These are all finished and fitted, mounted together on a block of hardwood ready to attach to the upright frame by simply bolting them.

Price.... .....$8 50



MILK CAN HOOKS

To Use in Connection with the Hoisting Crane Irons

Complete with crossbar and 25 ft. ¾-inch rope.....$2 50

PATENT "SURE GRIP" STEEL TACKLE BLOCK

This invention will interest all who have felt the necessity of a tackle block that will hold the load at any point without fastening the rope. The brake is automatic. The body of block made of steel plate. The pins are cold rolled steel.

PRICES, INCLUDING LOWER BLOCK

NO. AND SIZE OF ROPE	One Man Can Lift	Capacity	Test Without Breaking to	
No. 3. To be used with ⅜-in. rope	300 lbs.	600 lbs.	2,800 lbs.	$ 3 00
" 4. " " " ½ "	350 "	1,000 "	3,800 "	5 50
" 5. " " " ⅝ "	400 "	1,800 "	4,500 "	7 00
" 6. " " " ¾ "	450 "	2,500 "	5,800 "	8 50
" 6½. " " " ¾ "	850 "	4,000 "	9,000 "	14 00

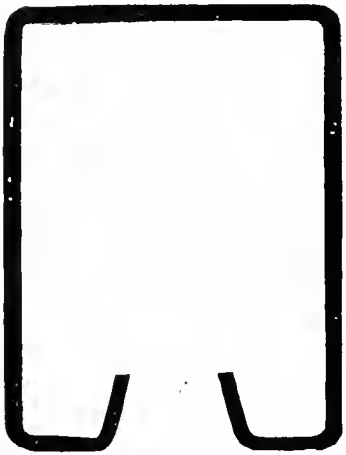
Track, including short hangers 3½ feet apart, fitted and ready to put up, suitable for carrying 500 lbs., per lineal foot.....$0 40
Same, suitable for carrying 1,000 lbs., per lineal foot..... 75
Single trolley, for 500-lb. track.....each, 1 00
Double " " heavy " ..... " 5 00

Can Supply Hangers Alone, if Wanted

THE IDEAL

OVERHEAD CARRYING SYSTEM.

For creameries, cheese factories, cold storage warehouses, etc.



No. 131.
Full size Cross Section of Track.

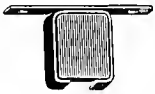
The up-to-date creamery man is asking today for more improved machinery, which will reduce the cost of manufacturing his products. We are being asked to furnish a device that will do away entirely with the truck, and will facilitate and reduce to a minimum the cost of handling tubs of butter, cans of cream, cases of eggs, cakes of ice, etc. To meet this demand, we have designed the Ideal Overhead Carrying System.

Track is made of cold rolled 16-gauge steel, and is perfectly rigid; is attached to the ceiling or support by means of bracket, shown in adjoining cuts Where it is necessary to suspend the track because of shafting or low opening, we furnish a special drop bracket.

No. 41.

No. 42.

No. 45.



No. 46.

Brackets.

The system is so simple, that it can be erected by any person of ordinary mechanical skill. You will be surprised to find how reasonable in price a simple system will be and how much it will accomplish. We will be very glad to make estimates for you whether any business results or not.

PRICE LIST.

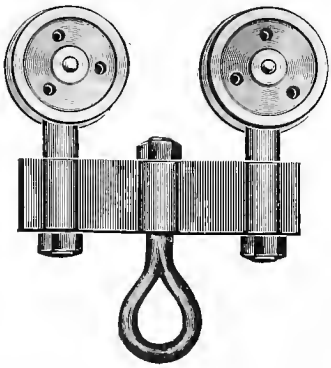
Track, per foot.....$0 25
Brackets, each..... 20

Weight, per foot, Track, 1¾ pounds.
Weight, Brackets, each, 1 pound.

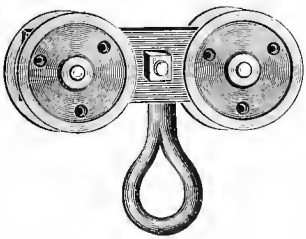
THE IDEAL

OVERHEAD CARRYING SYSTEM.

For creameries, cheese factories, cold storage warehouses, etc.



No. 39½.
Swivel Carrier.



No. 40½.
Rigid Carrier.

In a simple system, where one straight line of track only is required, No. 40½ Carrier would be used; in a system requiring curves or switches, the No. 39½ Swivel Carrier would be used.

These carriers are made entirely of steel, fitted with hardened roller bearings, and are guaranteed to carry a load of 600 pounds.

In creameries or milk depots, where cans are handled for some distance to and from cars or delivery wagons, the Ideal Overhead Carrying System will save its cost in a very short time. In Ice Making Plants, the actual cost of handling the products is reduced 100 per cent. In Commission Houses and Cold Storage Plants, where large quantities of goods have to be handled, by the use of curves, switches and special features, this system can be made to do the work of several men, and in a much more expeditious and satisfactory manner.

We also manufacture a larger outfit for carrying loads weighing as high as four tons.

Prices and estimates on special equipments furnished on application.

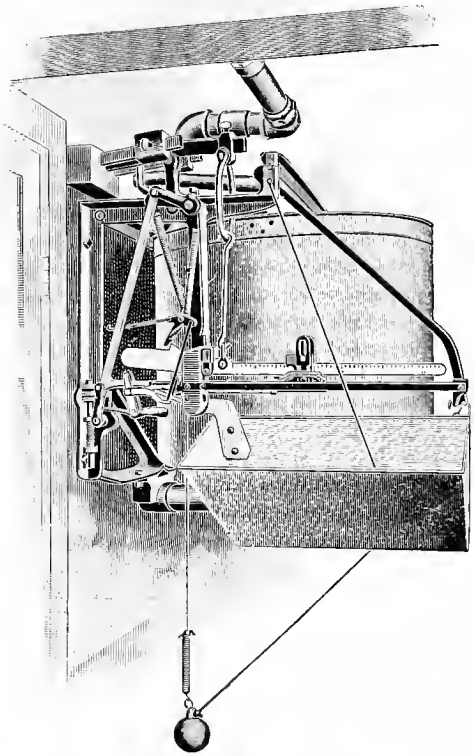
Please give exact dimensions of rooms, location of openings, and arrangement of machinery in your plant.

PRICE LIST.

No. 39½ Carrier.....$5 00
No. 40½ Carrier..... 4 00
Weight, each, 4 pounds.

THE IDEAL SKIM MILK WEIGHER.

THE PROBLEM OF SKIM MILK DISTRIBUTION.



THE PROBLEM

Every Creamery that returns the skim milk to its patrons has experienced the difficulty of getting a fair and equitable distribution. Many otherwise successful and promising creameries have been entirely ruined on account of trouble growing out of this problem. It has been a source of constant friction. The late comers either had no skim milk or it was so diluted with water as to be utterly worthless.

HOW TO OVERCOME IT

A great many different methods have been tried to overcome this difficulty. Some creameries employ a man to pump or dip all the skim milk for its patrons. This plan is expensive and at best is almost entirely a matter of guess work.

WEIGHT THE ONLY PERFECT STANDARD

It has been conceded for a long time that a mechanical distribution of some kind is the only absolutely accurate and satisfactory solution of the problem. This distribution, to be just to all, must be made on the basis of actual weight in exact proportion to the amount of milk delivered.

THE IDEAL WEIGHER

As its name implies, the machine actually weighs the milk. The weighing tank is adjusted so as to swing on a scale beam. The machine is located on the inside of the creamery at a point convenient for the delivery of the skim milk. It is connected with the skim milk tank so that the milk passes into the weigher tank and through it to the patron outside of the creamery.

THE CHECKS

Each machine is provided with a set of V-shaped checks, put up in a convenient case. These represent a certain amount of milk As the patron's milk is weighed in he is handed a check corresponding to the amount of milk he has delivered.

HOW IT WORKS

The patron having received his check proceeds to the skim milk platform. The check is placed in the slot in the bar which projects through the building. He then places his hand on the end of bar and pushes it slowly inward as far as it will go. This sets the scales at the right notch, and at the same time opens the inlet valve and the milk flows into the can. When the beam tips with the correct weight the inlet valve closes and the outer valves open, and the milk can be drawn off. The whole process is simple, rapid and absolutely accurate.

A FEW POINTS OF SUPERIORITY

Milk is delivered absolutely by weight, therefore there is no fluctuation on account of heat and cold. It is a well-known fact that milk varies largely in bulk compared to weight at different seasons of the year. The machine can be adjusted to deliver any desired per cent. Each check is marked plainly, with weight it represents. All parts are easy of access so as to be easily cleaned. It is automatic; no pumping or labor of any sort connected with its operation.

CANNOT BE BRIBED

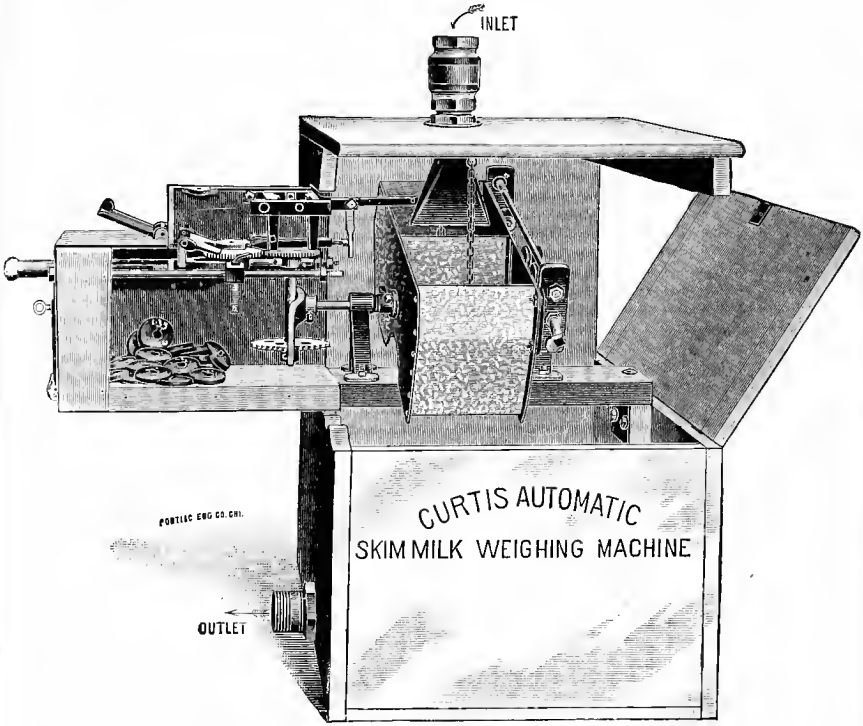
It is absolutely impossible to get more than the amount of milk represented by the checks. The Ideal Weigher cannot be bribed. It will show no partiality.

DESCRIPTION

This machine is made especially for the distribution of skimmed milk to the patrons of a creamery. It is simple in construction and easy to operate. It takes up small space and is easy to set up. It is thoroughly practical, strong and durable. It has a capacity of 10,000 pounds of milk per hour, and this can be increased if necessary. There are five ckecks of each size to a set. The shortest check represents 15 pounds of milk and the longest 400 pounds, with other sizes every 5 pounds intervening. The entire machine is constructed of iron and brass, with the best chilled steel bearings on scales. It has no wood to swell or get out of order, and no levers to operate.

We Ship These Machines on 30 Days' Trial. Price, $100.00

CURTIS' AUTOMATIC SKIM MILK WEIGHER.



The increasing demand for a low priced automatic skim milk delivery has induced us to bring out the Curtis' Automatic Skim Milk Weigher, as shown in the illustration.

This machine can be set inside or outside the building. The inside is preferable, as this lessens the danger of freezing in winter.

The skim milk is elevated to overhead tanks by pumps, the machine working on the gravity system.

Overhead tanks with jet pump or rotary pump attachment is necessary where this machine is used. A 12-inch elevation of the bottom of the tank above the valves on the weigher is sufficient.

With 1½-inch inlet, and ample outlet, the capacity is unlimited. It will handle more milk than any other weigher or pump made.

The illustration shows the tipping buckets and the possibilities of the machine, and it will readily be seen that when the skim milk flows into the buckets on one side, it will, as soon as that side has received the required quantity, oscillate to the other bucket; this lifts the chain which holds the valve and allows the milk to escape from the bucket on that side, and the bucket being thrown over the opposite bucket will fill, as the change of position of bucket brings inlet valve first on one side and then on the other.

Full and complete directions for setting and operating are sent with each weigher. Every machine is adjusted before sending out, and all that is necessary is to set it in its place according to directions, making the pipe connections, and the machine is ready for operation.

No. 1, Capacity 1 Separator	$ 75 00
No. 2, Capacity 2 "	85 00
No. 3, Capacity 3 "	100 00
Extra checks per dozen	50

THE "BARBER-COLMAN" CHECK PUMP

For measuring the skimmed milk or whey back to the patrons of Creameries and Cheese Factories.

DESCRIPTION.—The Barber-Colman Check Pump is, as shown in the cuts, simply an ordinary suction and force pump with a device added at the top which locks it and prevents its being operated until a check is dropped into the slot on top of the square box. Then if the T-rod is pulled, the pump unlocks and as many strokes can be taken as necessary to throw the amount of milk indicated by the check. By changing the adjustment of the stop collar, the length of the stroke can be varied to cause the pump to throw any desired percentage of the face value of the checks, allowing for the different percentages of the cream subtracted from the milk in different creameries. When all the strokes permitted by the check have been taken, the pump automatically locks, and if the T-rod is then pulled again, the check drops from its position in the mechanism into the check tray, which is placed in position to receive it, and locked up, to prevent the patrons from using the same checks over again. If the T-rod is pulled again, or any number of times after the pump is locked, it will not unlock the pump unless another check is dropped in. And if it be pulled before the check is pumped out, the check does not drop into the tray, but remains in the mechanism until the full number of strokes has been taken.

If the person operating the pump neglects to take full strokes, the amount of milk thrown at each stroke will be less, but the number of strokes which he can take before it locks will not be any greater. Consequently, in order not to cheat himself he must take full strokes. If the milk in the vat runs so low that the pump sucks air and foam, and does not throw the full proportion of solid milk, the operator of the pump will instantly know it by the feeling of the stroke as he pumps, and he should then wait until more milk has run into the vat.

METHOD OF USING.—The man who weighs in the milk pays each patron checks equal to the amount of milk which he brings. It is not necessary to calculate the amount of skimmed milk or whey due him—the pump does that. The patron takes the ckecks and drops them into the slot and pumps just the skimmed milk or whey due him.

PRICE, Each complete $50.00

EXTRAS AND PARTS FURNISHED UPON APPLICATION.

THE "IDEAL" WEIGH CAN GATE OPENER.

PATENT APPLIED FOR.

One of the Handiest Articles in a Factory.

It saves time, it saves milk; it saves work and therefore saves money. Every factory man will appreciate the usefulness of this little device at a glance. It is just what every weigh can should be fitted with. It can be attached easily and quickly and with proper use will last indefinitely.

IT IS SO MADE THAT IT CAN BE ADJUSTED TO FIT ANY STYLE OR SIZE CAN.

PRICE, Nickel-plated finish $2.50

WEIGH CANS.

Our Weigh Cans are strongly made of the best quality of XXXX tinplate. They have slanting bottoms and Perfection Gates.

PRICE

Plain.

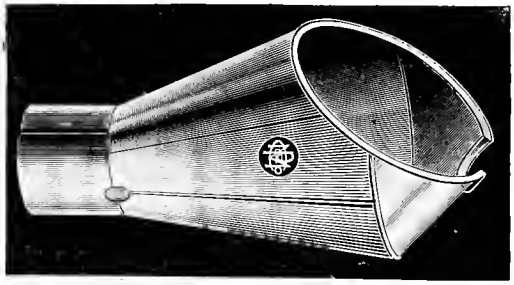
Holding	40 gallons,	with 1 gate		$10 00
"	60 "	" 1 "		11 00
"	80 "	" 1 "		13 00

With Partition.

Holding	60 gallons,	with 2 gates	$15 50
"	80 "	" 2 "	16 50

CONDUCTOR HEADS.

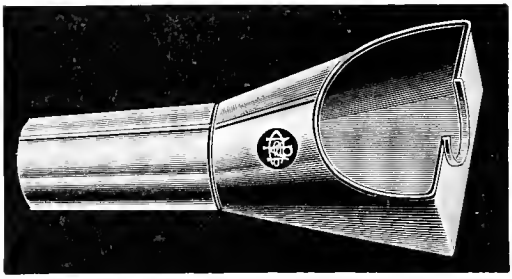
Our Conductor Heads are made extra strong, and connected with a short piece of pipe suitable for short delivery. When more lengths are required, they are arranged so as to telescope together, and are thus easier to handle.



HEAVY.

For large factories, made from the best XXXX tin.

Price, each.....$1 80



LIGHT.

For small factories.

Price, each.....$1 35

CONDUCTOR TROUGH.

Price, 2x Tin, 4 in., per foot $0 30
Price, 4x Tin, 6 in., per foot 40

Double the lists to obtain price on above goods furnished in tinned copper.

"PERFECTION" GATES

FLANGED, INSIDE THREAD

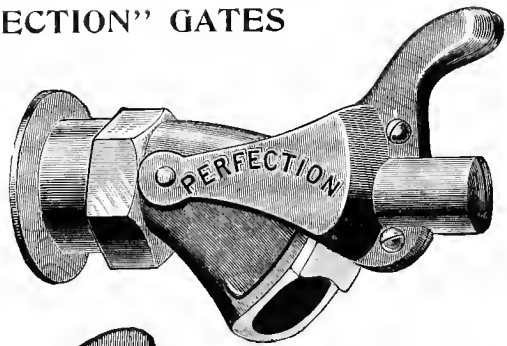
SIZES AND PRICES

All iron, japanned, 1-inch.....$1 25
" " " 1¼ " 1 50
" " " 1½ " 1 75
" " " 2 " 2 50
" " " 3 " 3 00

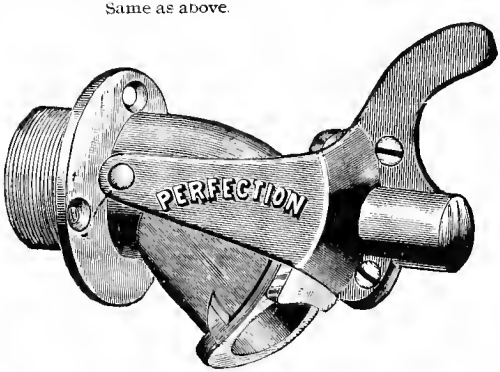
NO FLANGE, OUTSIDE THREAD

SIZES AND PRICES

Same as above.



Flanged, Inside Thread.



FLANGE CHURN GATE

SIZES AND PRICES

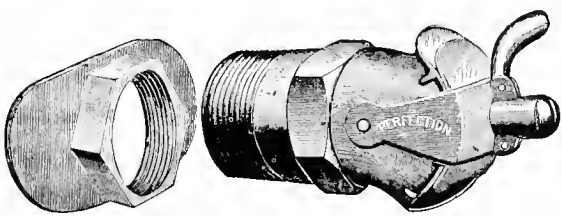
White metal, iron handles, 1-inch, each.....$1 75
White metal, iron handles, 1¼-inch, each..... 2 00
1½-inch, each..... 2 50
2-inch, each..... 3 00

WEIGH CAN GATE

SIZE AND PRICE

Iron, japanned, 3-inch, with galvanized iron collar, each.....$3 85

Collars only.....each, 85



PRICE LIST OF "PERFECTION" GATE EXTRAS

HANDLES

1-inch, right or left.....each, $0 15
1¼ " " " ..... " 15
1½ " " " ..... " 20
2 " " " ..... " 20
3 " " " ..... " 30

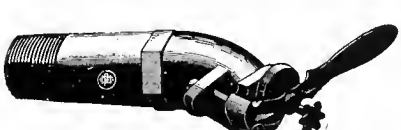
Per set and screws.....$0 30
" " " 30
" " " 40
" " " 40
" " " 60

CAPS (BRASS)

1-inch.....each, $0 40
1¼ " ..... " 45
1½ " ..... " 50
2 " ..... " 60
3 " ..... " 1 00

SPRINGS (BRASS)

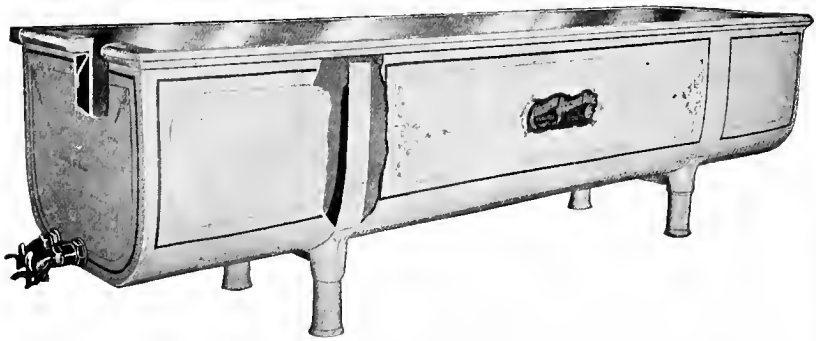
1-inch.....each, $0 10
1¼ " ..... " 10
1½ " ..... " 15
2 " ..... " 15
3 " ..... " 20



MOLASSES GATES

No. 1, 1- inch.....each, $0 60
" 2, 1⅛ " ..... " 70
" 3, 1⅜ " ..... " 80
" 4, 1⅝ " ..... " 90
" 5, 1 13/16 " ..... " 1 00

THE SANITARY IDEAL VAT.



The above illustration shows our new sanitary Ideal Vat. We believe there is a tendency among the better class of creameries to equip their plants with the most substantial goods it is possible to obtain. There is also a growing demand for utensils of every sort that can be thoroughly cleaned and kept in a perfectly sanitary condition, It is the growing demand for this class of goods that leads us to design this special vat.

It will be seen from the illustration that the vat is of superior construction throughout. There is no wood used in the construction of this vat, except the top rail to which the inner lining is attached. Instead of the ordinary wood body or frame we use heavy galvanized steel frame made in the same form as the tin lining; this will outlast several wood frame vats. The lining and body are so put together that the regular water space is left between them, and a space for ice box on the end provided for in the cream vats. The whole vat is held up and strengthened by strong iron legs which are attached to the inner knees or braces to which the outside lining of the vat is attached in such a manner as to absolutely prevent bulging or sagging.

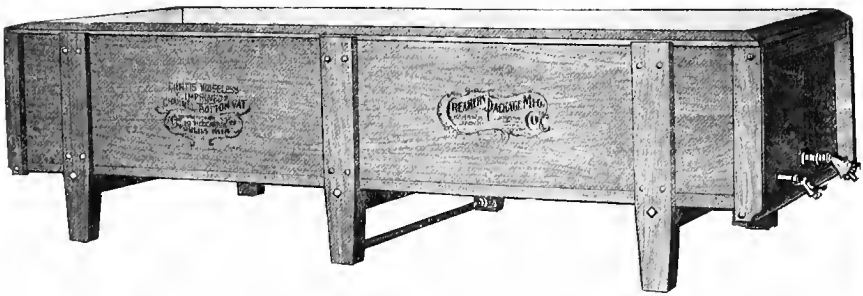
We fully guarantee these vats in every respect. We believe, considering their convenience and durability, they are the cheapest vat on the market today.

SIZES AND PRICES.

SIZE.	Tin Lined.	Copper Lined.
100 gallons	$ 55 00	$ 66 00
200 "	65 00	78 00
300 "	80 00	102 00
400 "	100 00	130 00
500 "	115 00	150 00
600 "	130 00	170 00
700 "	140 00	185 00
800 "	150 00	200 00
900 "	165 00	215 00
1000 "	190 00	245 00

Ice box on end $5.00 extra. See page 102 for dimensions of vats.

MILK RECEIVING VATS.



The above cut represents our regular style receiving vat made of cypress lumber and finished in the natural grain of the wood. This is the handsomest and most substantial wood vat ever built. The tin vats are made of the very best XXXXXX tin plate. All our receiving vats have the patented channel bottoms. The sides of the wood vats are kept from spreading by spreading rods which keep the middle legs from buckling. Steam pipes with our steam muffler attached are included with all receiving vats.

We also make these vats of pine with usual painted finish. The vats carried in stock all have tin lining; we make them to order with copper bottoms or full copper linings.

The discount sheet will show the discount on different styles.

SIZES AND PRICES.

Size.	Tin Lined.	Copper Bottom.	Copper Lined.
100 gallons	$ 32 50	$ 52 50	$ 62 50
150 "	35 00	53 50	63 50
200 "	40 00	55 00	65 00
300 "	45 00	60 00	70 00
400 "	50 00	70 00	85 00
500 "	55 00	80 00	100 00
600 "	60 00	85 00	105 00
700 "	70 00	88 00	115 00
800 "	80 00	95 00	125 00
900 "	90 00	105 00	135 00
1000 "	100 00	115 00	145 00

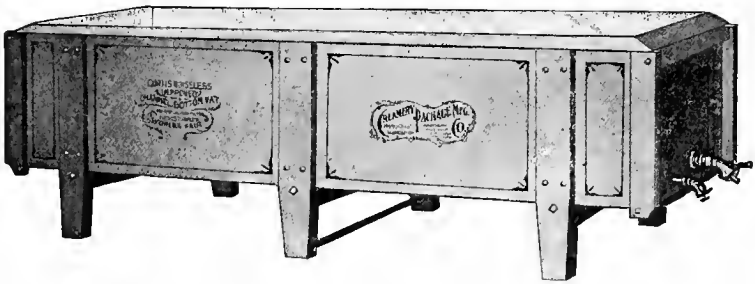
PRICES OF EXTRA TIN LININGS WITH RAILS.

100 gallons	$14 00	600 gallons	$31 00
150 "	15 00	700 "	34 00
200 "	16 00	800 "	37 00
300 "	18 00	900 "	40 00
400 "	24 00	1000 "	44 00
500 "	27 00		

See page 102 for dimensions of vat.

CREAM VAT

WITHOUT ICE BOX.



The above represents our Cream Vat, without ice box. To manufacture the finest quality of butter, it is necessary to hold the cream from twenty-four to forty-eight hours at a temperature that will properly ripen the cream, and develop the right amount of acidity. This process is assisted by using a vat with ice box. The regulation ice box for this vat is large enough to contain about 100 pounds of ice, and has a tight-fitting cover, which protects the ice and water from the influence of the surrounding air.

Cream Vats are provided with steam pipes, so that the cream may be brought to the proper temperature in cold weather, and these steam pipes are furnished with our Steam Mufflers, which make the heating-up process noiseless.

The tin vats are made of the heaviest tin plate, of best quality, and are constructed with Channel Bottoms, permitting the entire contents of the vat to be drawn off without tilting. The tin vats are painted on the outside to prevent rusting. The sides of the vats are kept from spreading by spreading rods which keep the middle legs from buckling, and Perfection Gates are furnished for the cream outlets.

We invite special attention to our Cream Vats with Copper Bottoms or full Copper Linings. Purchasers desiring vats of great durability should buy this style.

On special orders cream vats can be furnished with ice boxes extending the entire length of each side of the vat.

See discount sheet for special discounts on these vats, made of cypress lumber and finished in the natural grain of the wood. This is the handsomest and most durable wood vat ever made.

SIZES AND PRICES.

Size.	Tin Lined.	Copper Bottom.	Copper Lined.	Size.	Tin Lined.	Copper Bottom.	Copper Lined.
100 gallons	$35 00	$57 50	$67 50	400 gallons....	$55 00	$75 00	$ 90 00
200 "	45 00	60 00	70 00	500 "	60 00	85 00	105 00
300 "	50 00	65 00	75 00	600 "	65 00	90 00	110 00

Without ice box, $5.00 less.

Covers furnished when ordered, see page 104. With ice boxes on sides and one end, $5.00 extra.

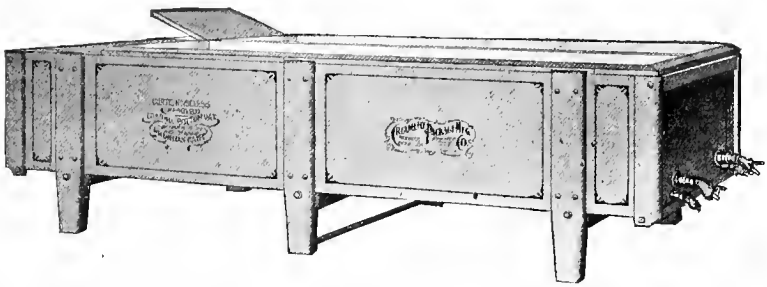
PRICES OF EXTRA TIN LININGS WITH RAILS.

100 gollons.....	$14 00	400 gallons	$24 00
200 "	16 00	500 "	27 00
300 "	18 00	600 "	31 00

See page 102 for dimensions of vats.

TWIN CREAM VAT

WITH ICE BOX ON END.



The wood part of our Twin Cream Vat which is represented in the above cut is divided lengthwise into two water-tight compartments, with separate ice box and heating pipes for each compartment; hence the contents of either vat may be heated or cooled entirely independent of the other.

These Twin vats are very desirable where it is necessary to economize space, and the quantity of cream is not large enough to require two vats.

The tin vats are all made with channel bottoms, and the cream outlets have Perfection Gates. Our Steam Mufflers are attached to the steam pipes, making them practically noiseless in operation. The sides of the vat are prevented from bulging by spreading rods which keep the middle legs from buckling.

Vats carried regularly in stock have ice box on one end only, but on orders we can shpply these vats with ice boxes running the entire length of each side.

We furnish Twin Vats with copper bottoms or full copper linings when desired.

See discount sheet for special discounts on these wood vats made of cypress lumber and finished in the natural grain of the wood. This is the handsomest and most durable wood vat ever built.

SIZES AND PRICES.

	Tin Lined.	Copper Bottom.	Copper Lined.
200 gallons	$ 50 00	$ 70 00	$ 80 00
300 "	60 00	75 00	85 00
400 "	70 00	90 00	115 00
500 "	80 00	100 00	125 00
600 "	90 00	110 00	140 00
700 "	100 00	120 00	150 00

Twin Vats with ice box on the sides instead of end, same price as above. With ice boxes on sides and and end, $5.00 extra.

PRICES OF EXTRA TIN LININGS WITH RAILS.

200 gallons	$21 00	500 gallons	$34 00
300 "	24 00	600 "	38 00
400 "	30 00	700 "	42 00

See page 102 for dimensions of vats.

SPECIFICATIONS FOR STANDARD SIZE VATS.

RECEIVING VATS, HIGH RAIL.

Capacity in gallons	1000	900	800	700	600	500	400
Width outside wood jacket, inches.	64	57	52	46	47	46	44½
Height outside, above floor, "	40⅛	40⅛	40⅛	40⅛	40⅛	40⅛	40⅛
Length outside "	184	184	184	184	169	149	128
Capacity in gallons	300	250	200	150	100	75	50
Width outside wood jacket, inches.	41½	41½	41½	39½	31½	30½	25
Height outside, above floor, "	38⅝	38⅝	38⅝	38⅝	38⅝	38⅝	38⅝
Length outside "	114	97	89	75	69½	63	53

CREAM VAT WITH SIDE ICE BOX.

MADE AS PER ABOVE LIST.

For ice box end add 12 inches to length. For ice box side add 12 inches to width. For twin vats, high rail and ice box on side add 17 inches to width.

CREAM VATS, FLAT RAIL AND ICE BOX END.

Capacity in gallons	1000	900	800	700	600	500	400
Width outside wood jacket, inches.	68	61	56	50	51	50	48½
Height outside, above floor, "	36⅜	36⅜	36⅜	36⅜	36⅜	36⅜	36⅜
Length outside "	195⅞	195⅞	195⅞	195⅞	180⅞	160⅞	137⅞
Capacity in gallons	300	250	200	150	100	75	50
Width outside wood jacket, inches.	45½	45½	45½	43½	35½	34½	29
Height outside, above floor, "	34⅞	34⅞	34⅞	34⅞	34⅞	34⅞	34⅞
Length outside "	125⅞	108⅞	100⅞	84⅞	79⅞	72⅞	62⅞

Vats with side ice box are always high rail—see above.

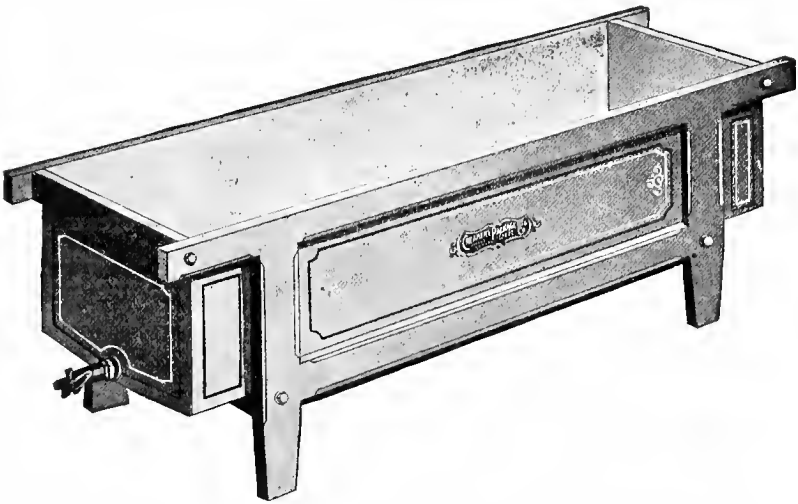
STANDARD SIZE CREAM VATS, TWIN FLAT RAIL.

Capacity in gallons	1000	900	800	700	600	500	400
Width outside wood jacket, inches.	77	70	65	63	60	59	57½
Height outside, above floor, "	36⅜	36⅜	36⅜	36⅜	36⅜	36⅜	34⅞
Length outside "	187⅜	187⅜	187⅜	172⅜	172⅜	152⅜	131⅜
Capacity in gallons	300	250	200	150	100	75	50
Width outside wood jacket, inches.	54½	54½	54½	52	44½	49	48½
Height outside, above floor, "	34⅞	34⅞	34⅞	34⅞	34⅞	34⅞	34⅞
Length outside "	117⅜	100⅜	92⅜	78⅜	72⅜	66⅜	56⅜

SANITARY VATS, ROUNDED BOTTOM.

Gallons, capacity	1000	900	800	700	600	500	400	300	200	100
Width outside, inches	54	54	48	48	42	42	36	36	36	36
Height outside, "	44	44	44	41	40	40	39	39	39	35
Length outside, "	179	163	178	176	172	151	149	117	67	59

SKELETON MILK VAT.



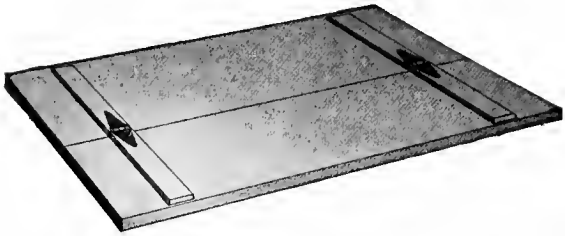
When a double vat with water compartment is not required these skeleton vats will serve every purpose. We construct these vats in every way equal to our regular vats. The frame work is strongly made of good weight of stock and nicely finished. The tin vat is XXXXXX throughout fitted with perfection gate. The outside of tin is painted to match the wood work making it very attractive looking. There is no other skeleton vat on the market that can compare in appearance and durability with this one.

SIZES AND PRICES.

100 gallons	$27 00
200 "	35 00
300 "	40 00
400 "	45 00
500 "	50 00
600 "	55 00
700 "	65 00
800 "	75 00

Special size vats of this style, either tin or galvanized steel, quoted on request.

CREAM VAT COVER.



It is much easier to control the temperature of the cream in vat, especially in hot weather, when a good tight cover is used. The cream vat usually stands in a warm room, and while the ice water under the vat cools a part of the cream, the free circulation of the hot air over the top prevents it from ripening evenly.

The cream in an open vat is also exposed to any dust or odors that may be admitted to the cream room. The vat cover in a large measure overcomes these difficulties.

Our vat covers are nicely made and finished to correspond to our regular style of vats.

PRICES.

CREAM VAT COVERS.

100 gallons	$2 50	600 gallons	$5 75
200 "	3 00	700 "	6 25
300 "	4 00	800 "	6 75
400 "	4 50	900 "	7 50
500 "	5 00	1000 "	8 25

CREAM VAT COVERS, TINNED LINED.

100 gallons	$ 4 25	600 gallons	$13 00
200 "	6 00	700 "	14 00
300 "	9 00	800 "	15 50
400 "	10 00	900 "	16 00
500 "	10 75	1000 "	17 00

CREAM VAT COVERS, FOR TWIN CREAM VATS.

100 gallons	$3 25	500 gallons	$6 25
200 "	3 75	600 "	6 75
300 "	4 75	700 "	8 75
400 "	5 50		

TWIN CREAM VAT COVERS, TINNED LINED.

100 gallons	$ 6 25	500 gallous	$13 75
200 "	7 50	600 "	15 25
300 "	10 75	700 "	17 25
400 "	11 50		

In ordering Cream Vat Covers for old vats be careful to give the exact dimensions.

CREAM RIPENING.

Recent years have added very little to the general knowledge regarding Cream Ripening. Modern buttermakers, however, have come to realize the importance of accuracy in the application of these principles. In order to eliminate the element of chance, special appliances are required which, when operated under the control of a competent buttermaker, make scientific cream ripening possible.

Practical observation and scientific investigation have demonstrated that the failures to make fancy butter are often due to faulty methods of ripening the cream, and a careful study of the same has shown that both the flavor and body of the butter may be greatly influenced by the temperature of ripening. The controlling of temperature is one of the most vital points in the butter making business. It not only influences the hardness and the softness of the butter, but it also affects the growth of ferments that produce the butter flavor. Science has proven that the desirable fresh sour taste that develops naturally in milk or in cream, is largely due to the growth of microscopic plants, and that one particular family of these plants is always present in great excess over all the other kinds. This most prominent family has been named the lactic acid bacterium. It thrives best at a temperature between 70 and 100 degrees F., and almost ceases to grow below 50 degrees F.

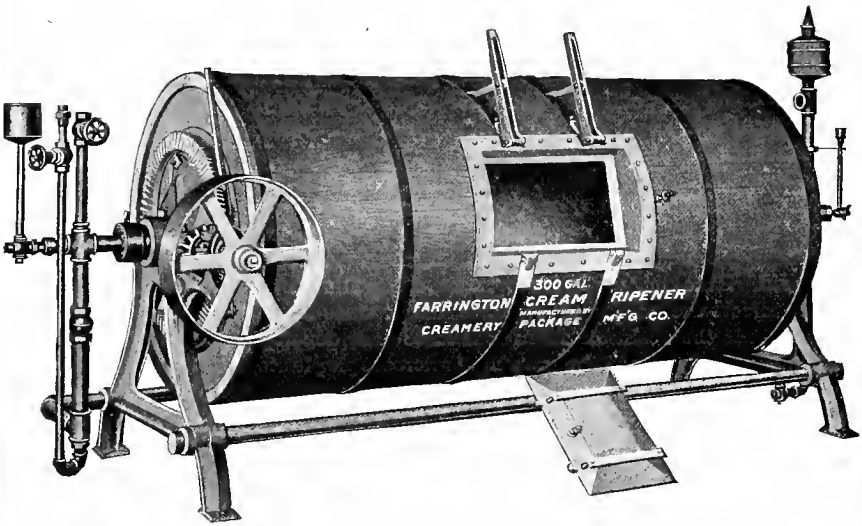
Besides this very important faculty of multiplying rapidly at a warm temperature and growing slowly in cold, lactic acid bacteria have the peculiar property of developing as well in the absence of air as when supplied with an abundance of oxygen. This fact has not been universally understood by buttermakers, and for some unknown reason they have generally assumed that cream must be ripened in open vats in order to give the desirable ferments sufficient air for a healthy growth. This is a mistake as lactic acid bacteria grow without air as well as with it, and consequently a closely covered cream vat not only gives ripening ferments all the air they need but it protects the cream from outside dust and unwholesome odors.

Too much can not be said about the importance of cream ripening, as it affects the flavor, body, uniformity and yield of butter. There is no reason why an absolutely uniform output should not be possible for every creamery.

Just how important the ripening process is to the yield of butter is not often considered. A close study of the situation will show that cream which is not ripened uniformly will not churn out a full yield of butter. When an open vat is used in the hot weather, ice water is kept under the pan of the vat and the hot air circulates freely over the cream. As long as the buttermaker is in constant attendance stirring the cream, the ripening progresses quite evenly. As soon, however, as this attention is withdrawn the cream at the bottom of the vat gets cold and the top warm. These conditions are sure to prevail at night. Cold cream ripens slowly; warm cream ripens rapidly. When churning time comes some of the cream is overripe and some not ripe enough. The result is that in order to churn out some of the cream the balance would have to be overchurned. Under these conditions a large part of the cream not ripe enough is lost in the buttermilk. In the winter time the conditions are reversed, the result is the same.

It is assumed that every buttermaker who undertakes to use a ripener is perfectly familiar with the proper temperature conducive to the best results, and when placed in position to control the conditions, can without difficulty bring the cream to the desired acidity at the time for churning.

FARRINGTON CREAM RIPENER.



This machine has been developed as a cream ripener by practical experiments in some of the best creameries in the country. The principal point to which we call attention is that the machine affords the operator perfect control of the temperature of the cream throughout the ripening process. The machine is so constructed that a circulation of hot or cold water can be passed through the drum as desired. The water to cool or heat the cream passes through the hollow gudgeons and circulates around the inner metal jacket and as the machine slowly revolves there is a constant and thorough agitation so that every particle of cream is acted upon in exactly the same manner.

These machines will give equally desirable results whether the cream comes sweet from the separator or is gathered from skimming stations and reaches the churning plant at various stages of ascidity. We advocate the use of the acid test as soon as the cream is placed in the ripener. This will enable the operator to determine the operation of the machine so as to bring the cream to the proper condition for churning at churing time. The test should be taken frequently throughout the time of ripening so that the process can be hastened by the application of heat or retarded by the application of cold as may be necessary.

Different grades of cream require different treatment. This ripener enables the operator to secure the most desirable results without regard to these conditions.

The regular style ripener has right angle clutch belt pulley. They can be furnished, however, with pulley on main shaft of ripener if desired.

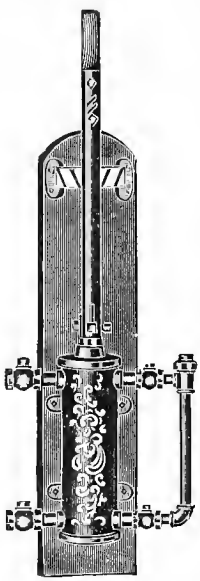
There is no limit to the opportunities this machine gives the butter maker to carry out his own special ideas on cream ripening.

SPECIFICATIONS AND PRICES F. O. B. FACTORY.

Gallons.	Weight Crated.	Length of Cylinder.	Length Between Bearings.	Height to Top of Cylinder.	Floor Space.	Outside Diameter.	Height to Cream Outlet.	Size of Pulleys.	Speed.	Price.
	lbs.	in.	in.	in.	in.	in.	in.	in.		
100	1000	63	68	45	40x106	28	12	16x4	60 to 90	$150
200	1300	84	94¾	48	45x132	32	12	16x4	60 to 90	200
300	1500	84	94¾	48	45x132	39	12	16x4	60 to 90	250

In ordering extras give number stamped in wood under the cover.

THE AIR COMPRESSOR.



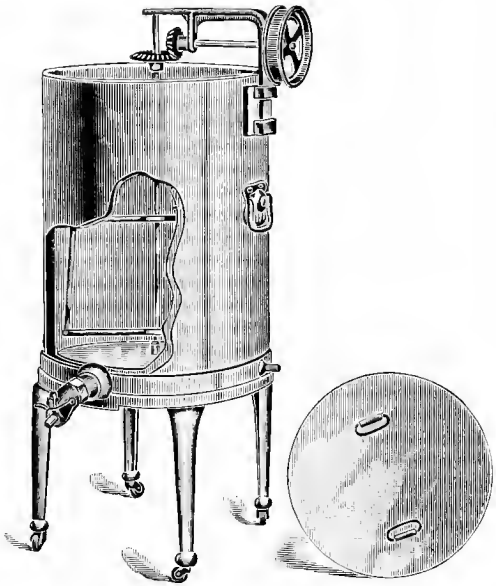
The simplest and most convenient method of conveying cream from ripener to churn is by the aid of our special air pump or compressor. This pump can be located convenient to power. A pipe connecting with air inlet in cover of ripener completes the outfit. The outlet of ripener is connected with churn by galvanized pipe. As soon as the pump is started the air pressure in ripener forces the cream into the churn. The process is simple, rapid and complete.

The air compressor is fitted with double brass cylinders, calculated to stand heavy pressure. It is furnished complete with counter shaft, connecting rod and crank plate.

SPECIFICATIONS AND PRICE.

Length of Cylinder.	Diameter of Cylinder.	Speed.	Size of Connections.	Length of Stroke.	T. & L. Pulleys.	Price.
15 in.	4½ in.	60	¾ in.	10 in.	2x24	$25.00

THE HAUGDAHL STARTER CAN.

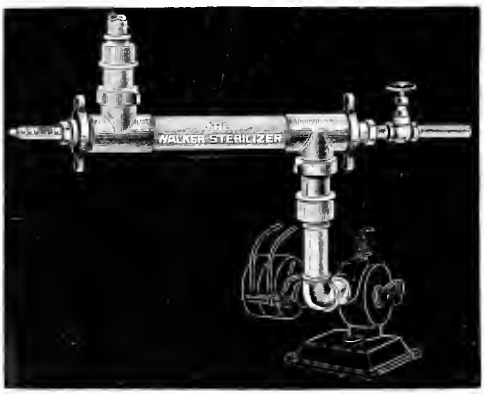


The construction of this can is such as to make the use of the can the most satisfactory and convenient possible. The very best materials are used throughout and the workmanship could not be improved. The illustrations of the can are such as to make extended description unnecessary. The can is furnished complete with all fixtures including Perfection Gate and heavy casters.

SIZES AND PRICES.

	Tin Lined.	Copper Lined
20 gallons.....	$17 00	$20 00
30 "	22 00	25 00

THE WALKER STERILIZER.



The time has come when close competition compels every creameryman to take the best possible care of his patrons and their interests, and while the price of butter runs so low the strictest economy has to be practiced by both.

The main object for sterilizing is to keep the skimmed milk sweet after it leaves the creamery until disposed of in the various ways of feeding. As calf raising is one of the chief industries of the dairy farmer and figures largely in his yearly returns, he cannot afford to lose any or feed them whole milk for months, as some do, when the skimmed milk can be kept sweet at so little expense. Proof can be had where calves have been raised on sterilized milk after they were three days old. Some people cannot raise calves under any circumstances.

The process of sterilization consists in heating the skim milk to such a temperature as will destroy the germs of decay.

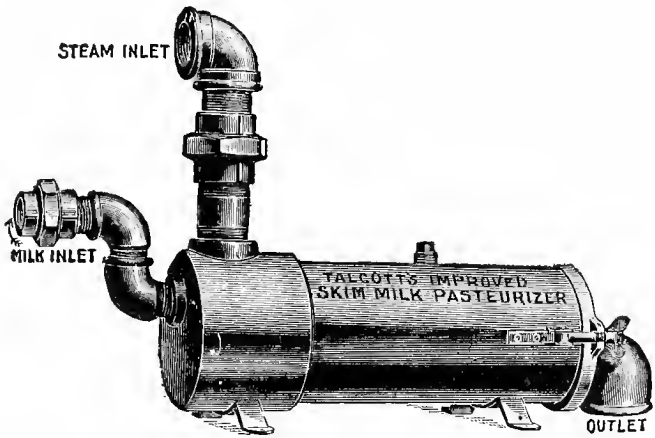
A number of devices have been arranged to do this work. All have been awkward and unsatisfactory. The Walker Sterilizer is simple and convenient. It will handle a very large amount of milk and do the work perfectly. It occupies very little room and uses but little steam.

PRICE..... $15.00.

15 DAYS' TRIAL ALLOWED TO RESPONSIBLE PARTIES.

Further Information on Application.

TALCOTT'S IMPROVED PASTEURIZER.



In developing the Talcott Improved Pasteurizer it has been our aim to reach the highest degree of utility in the least possible space and for the least cost.

As improved, this pasteurizer has many points of superiority over all others that will be readily recognized.

It is made entirely of iron, and is galvanized throughout.

It is self contained, and so constructed, that no steam can escape from it without first passing through the milk, consequently the steam is entirely condensed, making an exhaust pipe connection from the pasteurizer to the open air entirely unnecessary.

It is provided with an automatic check valve which prevents the steam from entering the milk inlet pipe, should anything happen to check the flow of milk.

It is compact, being 18 inches in length by 6 inches in diameter, and is easily cleaned, being so constructed that the rear head can be removed by loosening two thumb nuts, giving the operator access to the interior of the machine.

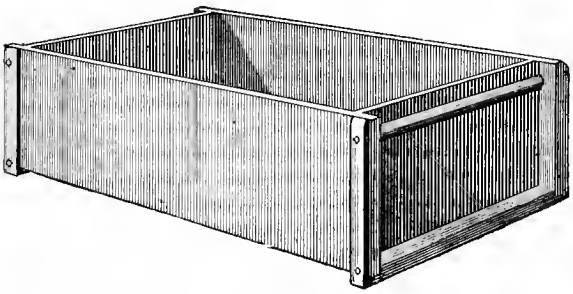
It is commonly used with exhaust steam, but it is so constructed that live steam can be used if desired.

It is entirely noiseless, works with great rapidity, does its work perfectly, and by following the directions sent out with each pasteurizer, any intelligent person can operate it, and it is impossible to scald or burn the milk onto the inside of it.

Every creamery in the country should operate one of these pasteurizers, as the object in pasteurizing milk is to so improve its keeping qualities, that it will remain sweet a long time, which is a great advantage to the patrons who feed the milk and are entitled to the best.

Price.....$25 00

WASH SINKS

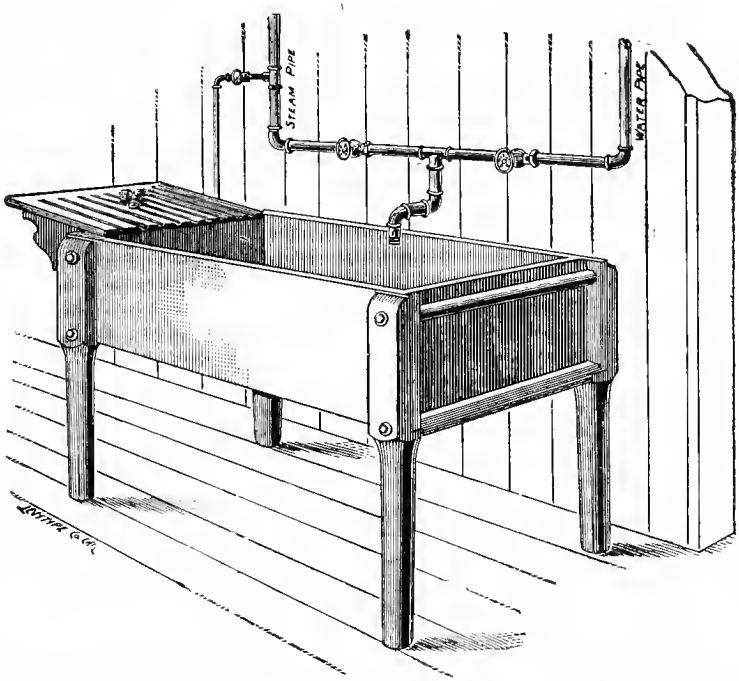


STATIONARY.

Our Stationary Wash Sink illustrated herewith is designed as a stationary attachment to the building. It is painted inside and out with Prince's paint. Pipe connections can be made the same as in the portable wash sink.

Price $6 00

PORTABLE.

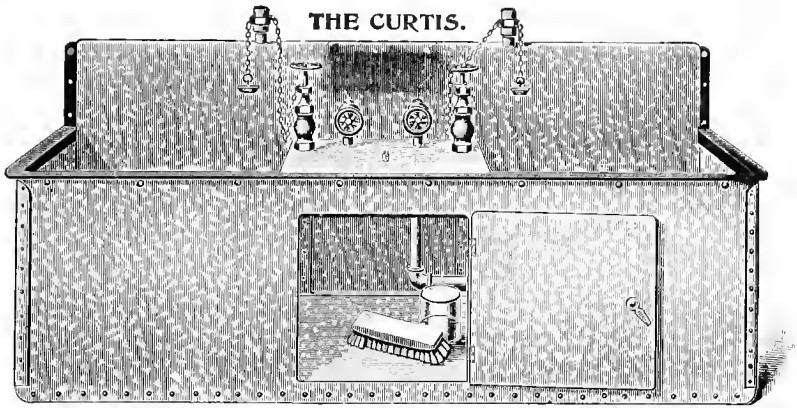


This illustration shows our Portable Wash Sink, with pipe connections The steam and water pipes may be brought together in one outlet, furnishing water at any desired temperature by the simple adjustment of the valves. It will furnish boiling hot water without the noise which follows the turning of steam into cold water. The attachment on the left shows steam pipe coming up through the center of the board for steaming separator bowls, tinware, tubs, etc., after they have been used, and is a very convenient arrangement. The outlet can be made through iron pipe running through the floor into an outside drain, or in any other way desired. The sink is handsomely finished in the same style as our vats and churns, and lined with heavy galvanized iron, and will be found very convenient in a factory. *PRICE*, not including connections.....$8 00

" including " 10 00

WASH SINK.

THE CURTIS.



As shown, this new sink is made of heavily coated galvanized sheet steel, bound on all its edges with black angle steel, making a strong, durable sink.

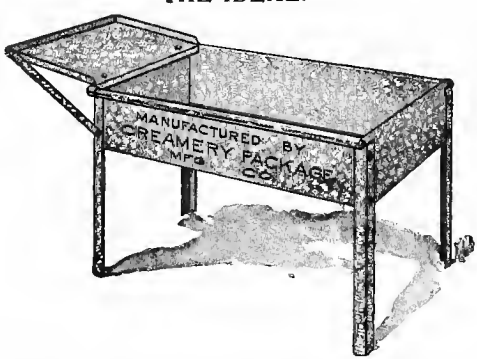
The small center platform divides the sink into two compartments, with hot and cold water in either or both, heated by Noiseless Water Heater. Jenkins' globe valves are used in its construction, preventing leaky pipes and valves, as is the case where cheap valves are used.

The platform used for steaming separator bowls or other articles, by the use of the steam jet shown, makes a handy closet for storage of brushes, soap or wash powders.

This sink, without legs, fastens to the wall by screws through the angle iron edge, doing away with the obstruction caused by sinks with legs or floor braces. Size 19 x 52 inches, 15 inches deep.

Price, with Valves and Connections, as shown, $25.00.

THE IDEAL.



Very strong, will not rot, shrink or swell.

	Length.	Width.	Depth.	Price.
No. 1	36 in.	22 in.	12 in.	$10.00
No. 2	48 in.	24 in.	14 in.	12.00

WASH SINKS.

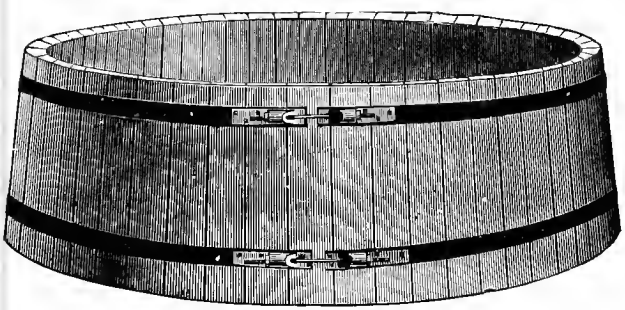
ROUND BOTTOM.

This sink is constructed for convenience and durability. The round bottom makes it possible to wash cans and other utensils with greater ease and rapidity than any other style. It has wrought iron legs and supports. Angle iron around the top. Body of heavy galvanized steel, handsomely painted on outside. Fitted with perfetion gate.

Size, 4 feet long, 2 feet wide, 16 inches deep. Price.....$15 00

TANKS.

ROUND WOOD.

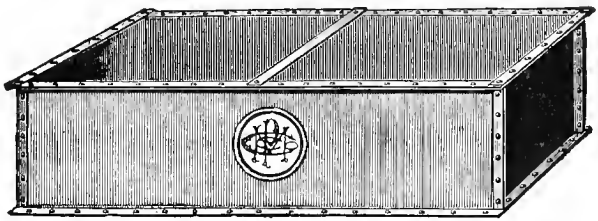


MADE OF TWO INCH LUMBER.

The prices on round tanks include nothing but the staves, bottom, dowel pins, and iron hoops. We set up every tank, and mark each piece and every hoop. Scale drawings, showing foundation, support, and method of frost proofing will be furnished all purchasers free of charge.

Length of Stave, in Feet.	Diameter of Bottom, in Feet.	Number of Hoops.	Capacity in Gallons.	Approximate Weight in Pounds.	Price, with Lug Hoops.
4	4	4	271	275	$13 50
2	6	2	280	275	12 00
6	4	5	425	400	17 50
3	6	3	541	400	21 75
2	10	2	818	600	24 00
5	6	4	839	525	22 50
3	8	3	856	550	30 00
4	7	4	905	600	24 00

THE "IDEAL" GALVANIZED STEEL TANKS

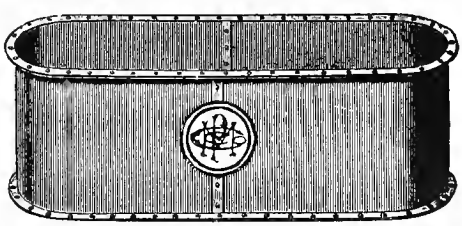


Are made of best annealed steel and heavily galvanized. All seams securely riveted between steel bars. Heavy steel angles for top rim. With ordinary care the "Ideal" galvanized steel tanks will last a life time. **Cannot leak.** Cannot burst by freezing. Cannot decay or rot. Always ready for use.

You cannot afford to waste time and money on Wooden Tanks, neither can you afford to purchase Steel Tanks which are in the experimental stage when you can buy the original, time-tried and reliable "**Ideal" Galvanized Steel Tanks** for the same money.

SQUARE ENDS

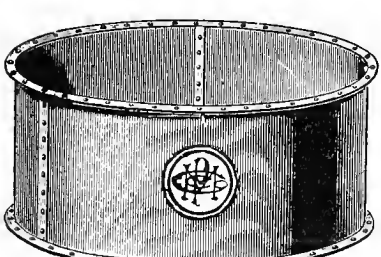
No.	Width	Height	Length	Capacity	Price	No.	Width	Height	Length	Capacity	Price
C28	2 ft.	1 ft.	8 ft.	3¾ bbls.	$ 7 70	35	4 ft.	2½ ft.	8 ft.	17 bbls.	$20 90
28	2 "	2 "	8 "	7½ "	12 10	36	4 "	3 "	8 "	23 "	25 30
C29	2 "	2 "	6 "	5¾ "	9 90	37	3 "	2 "	10 "	14 "	17 00
29	2 "	2½ "	8 "	9½ "	13 20	38	3 "	2½ "	10 "	18 "	21 45
30	2½ "	2 "	8 "	9½ "	13 20	39	3 "	3 "	10 "	21 "	23 65
31	2½ "	2½ "	8 "	12 "	14 30	40	4 "	2 "	10 "	19 "	22 00
32	3 "	2 "	8 "	12 "	14 30	41	4 "	2½ "	10 "	24 "	26 40
33	3 "	2½ "	8 "	14 "	17 00	42	4 "	3 "	10 "	29 "	29 70
34	4 "	2 "	8 "	15 "	18 15						



OBLONG TANKS

(ROUND ENDS)

No.	Width	Height	Length	Capacity	Price	No.	Width	Height	Length	Capacity	Price
B13	2 ft.	2 ft.	6 ft.	5¾ bbls.	$ 9 00	21	4 ft.	3 ft.	8 ft.	23 bbls.	$23 00
13	2 "	2 "	8 "	7½ "	11 00	22	3 "	2 "	10 "	14 "	15 50
14	2 "	2½ "	8 "	9½ "	12 00	23	3 "	2½ "	10 "	18 "	19 50
15	2½ "	2 "	8 "	9½ "	12 00	24	3 "	3 "	10 "	21 "	21 50
16	2½ "	2½ "	8 "	12 "	13 00	25	4 "	2 "	10 "	19 "	20 00
17	3 "	2 "	8 "	12 "	13 00	26	4 "	2½ "	10 "	24 "	24 00
18	3 "	2½ "	8 "	14 "	15 50	27	4 "	3 "	10 "	29 "	27 00
19	4 "	2 "	8 "	15 "	16 50	44	4 "	2 "	16 "	30 "	30 00
20	4 "	2½ "	8 "	17 "	19 00						

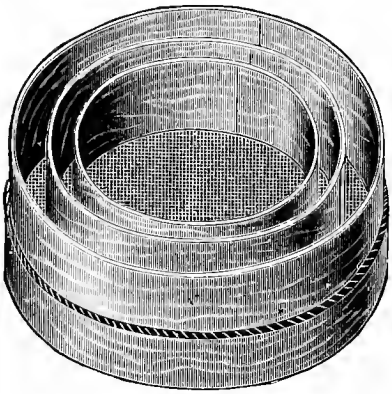


ROUND TANKS

No.	Diam.	Height	Capacity	Price
1	4 ft.	2 ft.	6 bbls.	$ 9 00
2	4 "	2½ "	7 "	10 00
3	4 "	3 "	9 "	11 00
4	4 "	4 "	12 "	13 00
5	5 "	2 "	9½ "	11 50
6	5 "	2½ "	12 "	14 00
7	5 "	3 "	14 "	15 50
8	5 "	4 "	19 "	19 00
9	6 "	2 "	14 "	16 50
10	6 "	2½ "	17 "	19 00
11	6 "	3 "	20 "	20 00
12	6 "	4 "	27 "	25 00
13	6 "	5 "	34 "	30 00

ALWAYS ORDER BY NUMBER

SIEVES



HORSE HAIR

FOR STRAINING BUTTERMILK

6 in. in diameter	$0.40
8 " " "	.50
10 " " "	.60
12 " " "	.75
13 " " "	.85

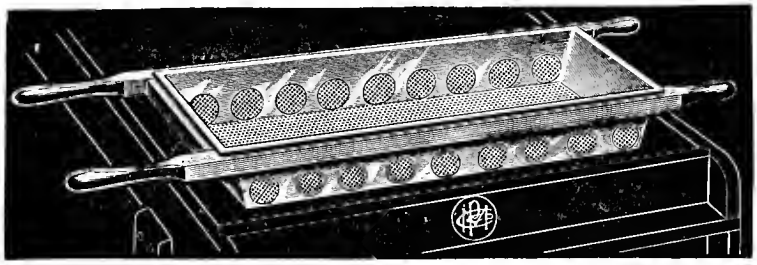
BRASS WIRE

FOR SIFTING SALT

12-in. brass wire, 20-mesh, each.....$0.60

STRAINERS

VAT



This strainer is used for straining cream or milk into the receiving vat at the factory, and is an article that every creamery-man should have. It is made of heavy tin with a perforated bottom. The frame is made of hardwood, and so constructed that it allows the strainer to set into the vat only about two inches, giving it this advantage that the vat can be filled full. It is made light and durable, and is easy to handle and clean, and will fit any sized vat.

Price $4.00

SQUARE

FOR COMBINED CHURNS

Price.....each, $2.50

In ordering this strainer state style of Churn and also length and width of opening.

McLAREN'S BUTTERMILK STRAINER

Made to fit the drain of all factory Churns. The neatest and best.

Price, each.....$1.00

STRAINERS

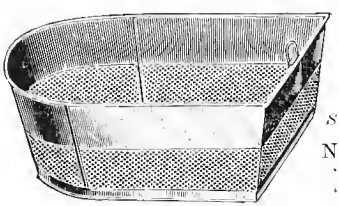
ELBOW BUTTERMILK STRAINER.

Fits all combined churns. Especially adapted for use with Disbrow churn gate.

Price, each.....$2 00

HANDY CHURN STRAINERS.

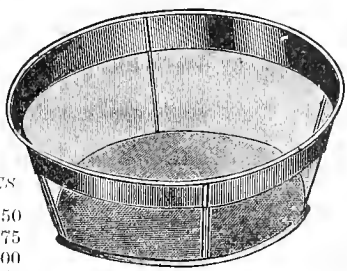
This style of strainer is preferred by many, as both sides and bottom are made of perforated tin, allowing the cream to pass through more readily.



Oblong.

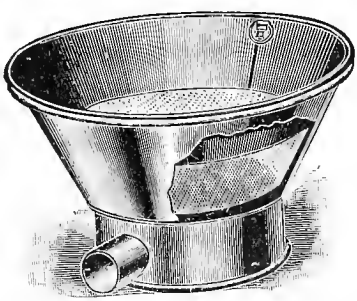
SIZES AND PRICES

No. 1,	12 inch..	$1 50
" 2,	14 " ..	1 75
" 3,	16 inch..	2 00
" 4,	18 " ..	2 50



Round.

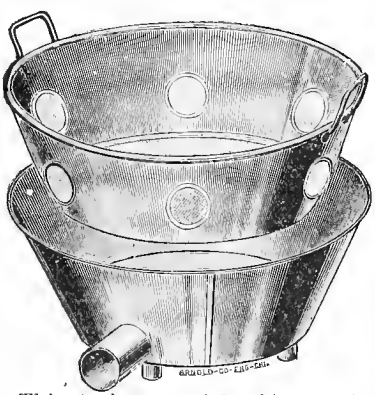
VERMONT BUTTERMILK STRAINER.



This strainer is very convenient in creameries for straining the buttermilk as it runs from the churns to the drain. The inner pan is made of perforated tin on the bottom and half way up the sides. It is placed on the floor under the churn outlet; is connected with pipe to the drain. The strainer catches any particles of butter that ran out. The strainer is lifted out and the butter turned back into the churn.

Price.....$2 00
Pipe for extension, per foot ... 25

ROE'S COMBINED CHURN AND BUTTERMILK STRAINER

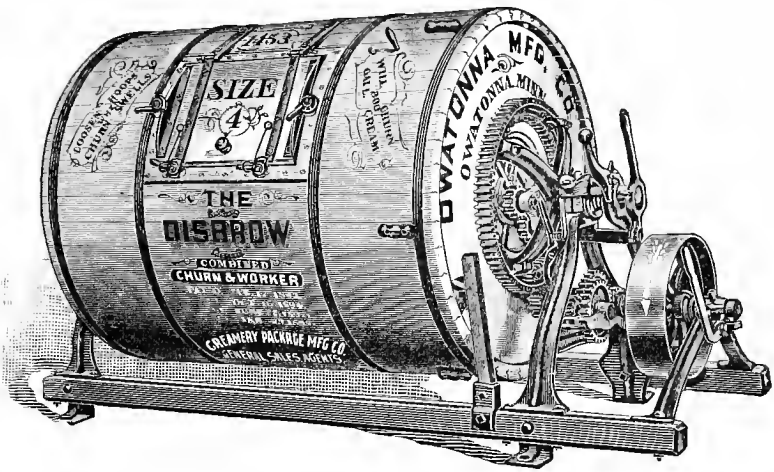


This strainer consists of two parts, which may be used separately or together. For straining the cream into the churn, the upper half only is used. For straining the buttermilk use the two parts together, and by means of a pipe attached to the spout conduct the buttermilk to the drain. Price, complete, $2. 00

Double the lists to obtain price on above goods furnished in Tinned Copper.

THE DISBROW

COMBINED CHURN AND WORKER.



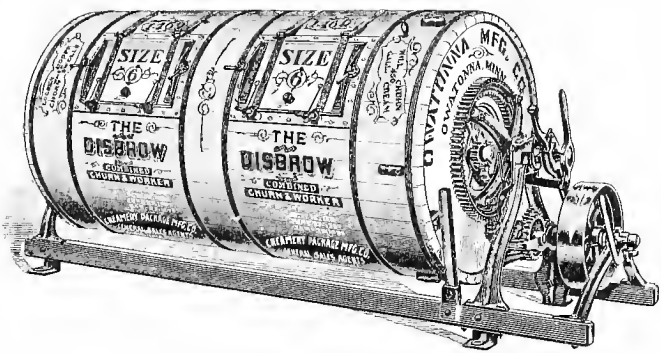
It is doubtful whether any invention in the creamery world has ever proved to be such an instantaneous and complete success as the Disbrow Cambined Churn and Worker. Only six years old, yet over fifteen hundred machines have been sold, the demand tests the capacity of the factory, and orders for this machine come not only from all parts of the United States, but from England, Denmark, Sweden, and even far away Australia.

It is not hard to understand why the Disbrow has attained such a wonderful popularity. It was the first combined machine ever put upon the market, and is to-day the only combined machine universally acknowledged to be a success, and all that its manufacturers claim for it. The principle of working the butter in the churn was first put to a practical application in this machine; and the method used in the Disbrow is so simple that a child can understand it—yet so perfect that nothing has ever been invented to equal it.

The value of the Disbrow is best shown by the fact that for the first three years after it was put upon the market the manufacturers

THE DISBROW

COMBINED CHURN AND WORKER



SIZES 5, 6 AND 7 HAVE DOUBLE DOORS.

were obliged to spend thousands of dollars to defend their patents from unscrupulous competitors. But the Disbrow has been as successful in the courts as in the creameries, and stands to-day, the unchallenged king of combined churns.

Effecting a saving in time, labor, space, shafting, pulleys; keeping the butter at an even temperature in hot weather, while working it enclosed and protected from dirt, flies and foul odors, the Disbrow will in one year's time make a change in the "profit and loss" account of many a creamery, that will open the eyes of the manager and board of directors.

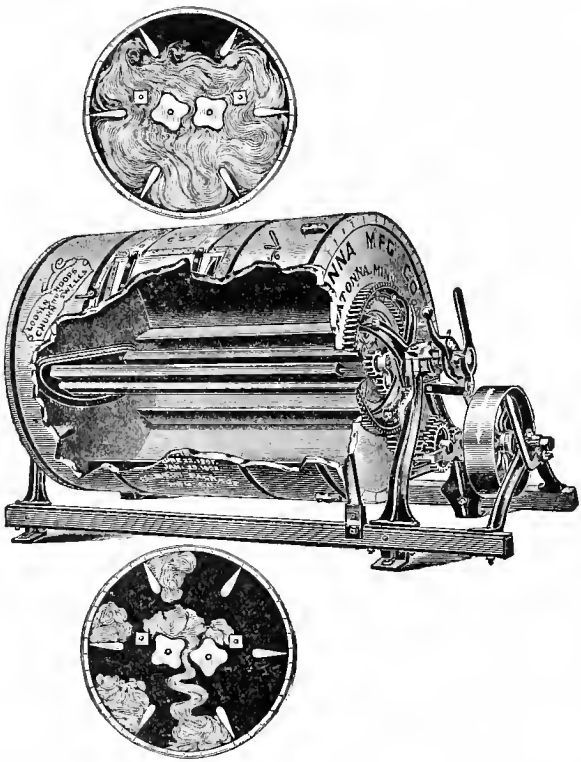
The Disbrow has been a maker of prize-winning butter from the beginning; and the list of high scores and prizes won on butter made in this machine would fill a book. At two of the last three meetings of the National Buttermakers' Association, the butter which took first prize each time was made in a Disbrow, both tubs scoring 98 points—the highest score ever made at one of the national conventions.

The Disbrow is manufactured of the very best material obtainable, by the most skilled workmen; improvements have been added from time to time; and it is fast supplanting every other kind of churn and worker. Over five times as many Disbrow machines have been sold as of any other combined machine; and today, nearly seventy-five per cent of all the combined churns sold are Disbrows. It is little wonder that it is called "The Churn That Works."

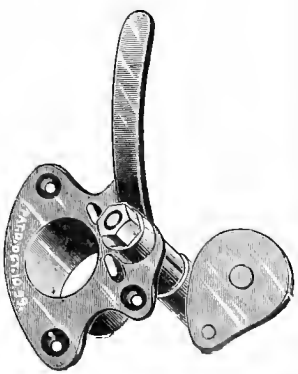
THE

DISBROW

Some say it does all we claim, others say we do not claim enough.



This sectional cut of the Disbrow Churn will give a clear idea of how the machine works both in churning and working. The butter is delivered to the working rollers in such moderate quantities that there is no danger of salving it and destroying the grain.



THE NEW DISBROW CHURN GATE.

The new Drisbow Churn Gate closes on inside end. Always perfectly clean.

Price, $2.00.

Furnished free on all churns.

DISBROW

Sizes, Specifications and Prices.

SIZE.	Full capacity	Will churn.	Will work.	Length over all.		Diameter of bbl.		Length between center of feet.		Width between center of feet.		Shipping Weight.	PRICE.
	GAL.	GAL.	LBS.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	LBS.	
2	50	35	70	4	6	2	5	4	4	3	0	400	$ 60.00
B2	50	35	70	4	6	2	5	4	4	3	0	400	80.00
A2	100	75	150	5	10	3	3	3	5	2	9	600	120.00
A3	145	110	220	7	1	3	3	4	8	2	9	800	130.00
3	284	220	440	7	3	4	1	5	0	3	0	1250	140.00
4	392	300	600	8	6	4	1	6	3	3	0	1450	155.00
5	490	375	750	9	9	4	1	7	6	3	0	1600	170.00
6	596	450	900	11	0	4	1	8	9	3	0	1700	190.00
7	690	500	1000	12	3	4	1	10	0	3	0	1800	225.00

PULLEYS.

Diameter, Face and Speed.

SIZE.	Style of Pulley.	Diameter.	Face.	Speed per minute.
2.....	Tight & Loose	12 in.	3 in.	160 revolutions
B2.....	Clutch	10 "	3 "	160 "
A2 and A3.....	"	13½ "	4 "	180 "
3 and 4.....	"	19 "	5 "	165 "
5, 6 and 7.....	"	22 "	6 "	165 "

PRICE LIST OF REPAIRS FOR DISBROW CHURNS,

SIZES 2 AND B 2.

No.	Name	Price
44	Hand wheel screw.....	1.00
60	Leg on gear end.....	$3.25
82	" " off "	2.75
62	Long Box	2.50
B62	" "	3.25
63	Lever to start rollers.....	.75
B64	Gear Spider	2.75
65	Hoop Clamp	.75
67	Balance Weight	.75
68	Long Box Cap.....	1.00
B68	" " "	1.00
69	Lower Short Box.....	.50
70	Upper " "	.50
71	Cross-head, gear end.....	2.00
72	Roller gear	1.25
73	Hand wheel nut.....	.75
74	Ring Spider	2.25
75	Door Frame	2.25
76	Loose Head	1.75
77	Packing Ring	1.50
78	Glass Ring	.25
79	Internal Gear	3.00
80	Support for long Box.....	.75
B80	" " " "	.80
83	Drive Pinion	.75
84	Pulley 3 in. x 12 in.....	2.80
85	Collar on 1 in. shaft.....	.50
87	Ball latch	.90
88	Shift Lever	1.75
90	Gear Shaft Box	1.00
B90	" " " Frame.....	1.50
92	Friction Arm	2.00
93	Pulley 3 in. x 10 in. and gear	4.25
94	Strap under pulley hub.....	.25
B30	Double shifting gear.....	1.25
B31	Clutch gear on main shaft...	.75
14	Door Button	.30
	Drive shaft 1 in. x 15½ in...	1.50
	" " 1 in. x 13 in....	1.50
	Cross-head shaft 1¼ in. x 7¼ in.	1.75
	Cross-head shaft 1¼ x 10½..	1.80

PRICE LIST OF REPAIRS FOR DISBROW CHURNS,

SIZES A 2 AND A 3.

No.	Name	Price
H 1	Large Driving Gear	5.00
102	" Ring Spider	6.00
A102	" " "	6.00
3	" Gear "	6.00
104	Loose Head	2.90
106	Cross Head, gear end	2.75
107	" " off end	2.75
108	Packing Ring	2.50
110	Single Roller Gear	1.65
111	Small intermediate gear	1.50
112	Large " "	1.75
113	Door Frame	2.90
14	" Button	.30
R 14	" "	.30
L 14	" "	.30
115	" Cleat	.25
116	Leg on gear end	4.25
117	" " off end	3.75
A117	" " " "	3.75
118	Outside Leg, gear end	3.00
119	Outside Leg Box	1.00
T 19	" " "	1.00
120	Box on pulley shaft	1.00
121	Friction Arm with Pinion	2.50
A 23	Long Lock Lever	2.65
123	" " "	2.65
124	Bracket for lever	.75
125	Clamp Hand Wheel	1.00
27	Support for shift rod	.25
129	Pulley 4 x 13½	3.50
130	Pinion (clutch) slow down	2.25
131	Double Pinion	2.25
132	Drive "	1.75
W 33	Plate under slide	.25
136	Box-Bottom, gear end	.75
137	" Cap " "	1.50
A 37	" " " "	1.50
138	" Bottom, off end	1.75
139	" Cap, off end	.75
140	Lever to start rollers	1.50
152	Cap Box for Pulley shaft	.75
153	Bridge Tree	1.50
M 54	Reducing Gear Lever	1.75
LT54	" " " Latch	.25
T 55	Starting Lever	1.00
T 56	Slide to move Pulley	.50
157	Slide to move Reducing Gear	.50
158	Clutch for Fork Lever	2.50
A158	" " " "	2.50
LT58	Malleable Fork for Lever	.80
W 58	" " " "	.80
161	Stuffing Box	.70
162	Stop on Barrel	.40
163	" " Girt	.40
T 64	Malleable Hinge on Door	.50
T 65	" " " Barrel	.50
164	Ball Lever	2.00
	Pulley Shaft 1¼ x 27	2.00
	Cross-head shaft 1½ x 12½	1.80
	" " " 1¾ x 14½	2.25
	Short Shaft 1 x 5½	.75
	Pulley Shaft Collar 1¼ hole	.75
	Steel Clamp Pin	.40
	Butter Rolls for size A 2 each	6.00
	Butter Rolls for size A 3 each	6.10
	Roller Shelf for size A 2 each	1.00
	Roller Shelf for size A 3 each	1.10
	Flights for size A 2, each	1.40
	Flights for size A 3, each	1.50
	Wood cross-head	1.60
	Roller Shelf Support	1.40
	Door, wood, painted	.60
	½ in. cork packing, per foot	05

PRICE LIST OF REPAIRS FOR DISBROW CHURNS,

SIZES 3, 4, 5, 6 AND 7.

No.	Name	Price
H 1	Large Driving Gear	5.00
T 1	" " "	7.50
V 1	Large Internal Gear	9.50
2	Ring Spider	6.50
T 2	" "	7.25
R 2	" "	7.25
3	Gear Spider	6.00
T 3	" "	7.75
4	Loose Head, gear end	3.00
M 4	" " " "	3.00
5	" " off end	4.00
6	Cross Head, gear end	2.75
H 6	" " " "	2.75
T 6	" " " "	3.75
7	" " off "	2.75
H 7	" " " "	2.75
8	Packing Ring	2.50
10	Single Roller Gear	1.75
T 10	" " "	1.65
11	Double " "	2.50
T 11	Small Intermediate Gear	1.50
12	" " "	1.25
T 12	Large " "	2.00
13	Door Frame	3.00
T 13	" "	3.00
C 13	" "	3.00
14	" Button	.30
X 14	" "	.30
R 14	" "	.30
L 14	" "	.30
XR14	" "	.30

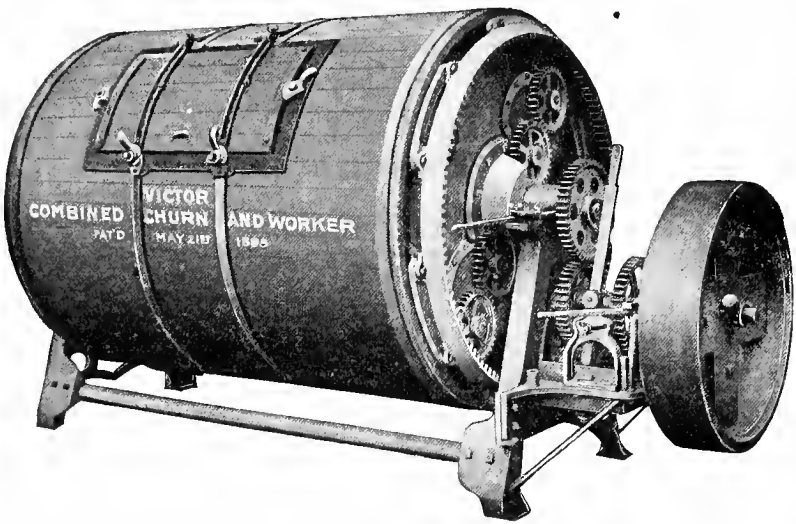
No.	Name	Price
XL14	Door Button	$ .30
15	Cleat for Door	.25
16	Leg on gear end	4.50
H 16	" "	4.50
T 16	" "	6.50
316	" "	6.50
17	Leg off end	3.75
T 17	" "	4.75
217	" "	4.75
317	" "	4.75
18	Leg on Outside	1·75
T 18	" "	3.25
19	Box on Outside Leg	1.00
T 19	" " "	1.00
20	Bridge Tree	3.00
H 20	" "	3.00
220	Box on Pulley Shaft	1.00
320	" " "	1.00
21	Friction Arm with Pinion.	2.50
T 21	" " "	2.50
C 21	" " "	2.75
C 22	" " "	3.50
H 22	" " "	3.50
22	Friction Arm	2.25
23	Long Lock Lever	2.75
223	" " "	2.75
24	Bracket for Lever	.75
224	" "	.75
A 24	" "	.75
66	" "	.75
25	Clamp Hand Wheel	1.00
26	Catch Lever	.25
27	Support for Shift Rod	.25
29	Pulley 5 x 19	5.50
T 29	" 5 x 19, new	5.75
30	Pinion (clutch) slow down.	1.50
H 30	" " "	1.50
T 30	" " "	2.50
W 30	" " "	2.50
31	Double Pinion	2.00
T 31	" "	3.00
W 31	" "	3.00
H 31	Double Pinion	2.00
32	Drive Pinion	1.25
T 32	" "	1.75
V 32	" "	2.00
33	Cap to hold No. 56	.75
34	Dog and ring	1.50
35	Holder for Hand Wheel	.75
36	Box Bottom gear end	.75
H 36	" " off end	.75

No.	Name	Price
T 36	Box Bottom gear end	$1.00
37	" Cap gear end	.75
T 37	" " "	1.25
237	" " "	1.75
38	Box Bottom off end	.75
T 38	" " "	2.00
39	" Cap off end	.75
H 39	" " "	.75
T 39	" " "	1.00
40	Lever to start Rollers	1.50
240	" " "	1.50
L 40	" " "	1.50
41	Glass Ring	.25
42	Clutch Hub	.60
43	Hoop Clamp	.80
44	Hand wheel screw, old style	1.25
H 44	" " " for 3 & 4	1.50
46	Latch for Hand Wheel	.25
47	Shifter for Hand Wheel	2.25
48	Shifter Screw Top	1.00
49	" " Bottom	1.00
50	Nut for H44	1.00
51	Malleable Clamp	.75
52	Cap Box for H20	.75
T 52	" " " Pulley Shaft	.75
252	" " "	.75
T 53	Bridge Tree	1.50
C 53	" "	1.50
H 53	" "	1.50
T 54	Reducing Gear Lever	1.75
W 54	" " "	1.75
M 54	" " "	1.75
LT54	" " " Latch	.75
T 55	Starting Lever	1.00
T 56	Slide to move Pulley	.50
LT56	" " "	.50
T 57	" " " Reducing Gear	.50
T 58	Clutch for Fork Lever	2.75
H 58	" " " "	1.75
LT58	Fork for Lever (malleable)	.80
W 58	" " " "	.80
T 59	Pulley, 6 x 22	6.75
0	Washer for cross-head stud	.10
T 61	Stuffing Box	.75
T 62	Stop on Barrel	.40
T 63	" " Girt	.40
T 64	Malleable Hinge on Door	.50
T 65	" " " Barrel	.50
164	Ball Lever	2.00

Name.	Price	Name.	Price	Name.	Price
Pulley Shaft 1½x30	$2.00	Short Shaft, 1x5½	$0.75	Roller Shelves for size 7, ea.	$1.60
" " 1½x30 new	2.00	Steel Clamp Pin	.40	Flights for size 3, ea.	1.60
" " 1½x20 new	2.00	Butter Rollers for size 3, ea.	6.20	" " 4, "	1.70
" " Collar	.70	" " " 4, "	6.40	" " 5, "	1.80
Cross-head Shaft, 1½x11½	2.50	" " " 5, "	6.60	" " 6, "	1.90
" " 2¼x15	3.00	" " " 6, "	6.80	" " 7, "	2.00
" " 1¾x15	2.15	" " " 7, "	7.00	Wood Cross-head	1.60
" " 1¾x15½	2.10	Roller Shelves " 3, "	1.20	Roller Shelf Support	1.40
" " 1½x12½	1.80	" " " 4, "	1.30	Door, wood, painted	.60
" " 1¾x14½	2.25	" " " 5, "	1.40	½-in. Cork Packing, per ft.	.05
Short Shaft, 1 x5¾	.50	" " " 6, "	1.50	X-Yoke for No. W54	.50
" " 1¼x9	1.00				

Please give the size and shop number of your churn when ordering repairs. Also the figures (and letters) on the piece wanted. This will save much delay in filling orders.

THE VICTOR COMBINED CHURN AND BUTTER WORKER.



The above cut shows the "Victor" complete ready to run. The internal works consist of four rollers in two sets with which all the work of churning and working the butter is done.

STYLES 3, 4, 5, 6, 7, 8, 9 and 10.

All "Victor" Churns above size No. 6 are provided with two doors, No. 6 and all smaller sizes with one door. In ordering extra churn doors carefully state whether it is a flat or an oval door that is wanted, and give the exact length and width of the door the new one is to replace.

The "Victor" Combined Churn and Butter Worker is no longer an experiment. It has abundantly proven its high qualities as a first-class butter-making machine.

The running gear of this machine is large, strong and simple, with but a minimum of friction, which promises durability and a great saving of repairs.

It is an exhaustive churner, being so arranged that the working rollers give marked assistance in the process, and the product it presents when its work is finished, speaks more loudly and positively of its high qualities than any combination of words can do.

For simplicity of construction and ease of manipulation, in strength of gearing, powers of endurance and perfection of its work it has no superior; and in the

rapidity of its butter working and the ease with which its product can be removed, it is a delight to every butter-maker who uses it.

The construction of the "Victor" is such that in working, the entire mass of butter passes twice between the rollers at every revolution of the drum, hence it is a very quick worker.

The working rollers which are stationary in churning, are put in motion ready for use when the working process is to begin, by a simple movement, and its novel method of working the butter is so complete that the grain is left intact, and the work is performed in so short a time as to cause astonishment to those who witness its operations.

When the working is finished, by a slight manipulation of gear the rollers are fixed and become elevators, which, by a half turn of the churn bring the butter in a mass to the proper position for removal, thus avoiding the necessity of reaching far into the churn in the act of removing the butter. When the rollers are thus used they bring up the entire mass of butter, leaving none in the bottom of the churn.

The "Victor" in its inside construction has no machinery whatever except its four rollers, in two sets, always bearing the same relation to each other and to the drum, in the heads of which they have their bearings, and with which they always move when the churn is in motion whether they are revolving on their own bearings, as in the working of butter, or are fixed as when churning, or elevating the butter for removal from the churn.

REMOVING THE BUTTER.

To remove the butter from the "Victor," set the rollers, revolve the churn until the door is in the proper place, and the rollers, acting as elevators, will hold the butter in position for easy removal. It will be found that when the churn is stopped for removing the butter, it will remain at the place it is stopped without props or braces, or any other aids to hold it in position. It supports itself regardless of the position of the butter.

SIZES AND PRICES OF FACTORY CHURNS.

No,	Diameter.	Length Outside.	Length Over All.	Capacity in pounds.	Shipping Weight.	Price.
3.....	4 ft. 2 in.	4 ft. 10 in.	8 ft.	50 to 300	1600	$130.00
4.....	4 ft. 2 in.	5 ft. 6 in.	8 ft. 8 in.	50 to 450	1700	140.00
5.....	4 ft. 2 in.	6 ft. 2 in.	9 ft. 4 in.	50 to 550	1800	150.00
6.....	4 ft. 2 in.	6 ft. 10 in.	10 ft.	100 to 650	1900	160.00
7.....	4 ft. 2 in.	7 ft. 6 in.	10 ft. 8 in.	100 to 750	2000	170.00
8.....	4 ft. 2 in.	8 ft. 2 in.	11 ft. 4 in.	100 to 825	2100	180.00
9.....	4 ft. 2 in.	8 ft. 10 in.	12 ft.	100 to 900	2200	190.00
10.....	4 ft. 2 in.	9 ft. 6 in.	12 ft. 8 in.	100 to 1000	2300	200.00

CLUTCH PULLEYS.

DIAMETER, FACE AND SPEED.

Size of Churn.	Diam. Inches.	Face.	Speed per Minute.	Size of Churn.	Diam. Inches.	Face.	Speed pr Minute.	Size of Churn.	Diam. Inches.	Face.	Speed pr Minute.
No. 3	30	6	110 to 120	No. 6	30	6	110 to 120	No. 9	30	8	110 to 120
No. 4	30	6	110 to 120	No. 7	30	6	110 to 120	No. 10	30	8	110 to 120
No. 5	30	6	110 to 120	No. 8	30	8	110 to 120				

"VICTOR" DAIRY COMBINED CHURN.

SIZES AND PRICES.

No.	Diameter.	Length Outside.	Length Over all.	Capacity in pounds,	Shipping Weight.	Price.
1	3 ft. 4 in.	3 ft. 6 in.	5 ft. 9 in.	20 to 150	500 lbs.	$110 00
2	3 ft. 4 in.	4 ft. 2 in.	6 ft. 5 in.	20 io 200	600 lbs.	120 00

VICTOR FACTORY CHURN EXTRAS.

FOR CHAIN AND GEARED MACHINES.

For styles 3, 4, 5, 6, 7, 8, 9 and 10.

VICTOR CHAIN MACHINE.

No.		Price.
0.	Clamp Washer, each	$ 15
1.	Main Gudgeon	5 00
2.	Main Leg Front	8 00
3.	Lower Clutch Shifter	1 00
D.	Lower Clutch Shifter	1 00
4.	Top Shaft Frame	6 00
5.	Bottom Shaft Frame	6 00
6.	11-inch Sprocket	3 00
6½.	12-inch Gear	3 50
6, 7, 8, 8½, 9, 12 and 15, Box Caps, each		50
10.	Front Roller Supports, each	3 00
10¼.	Front Roller Supports, each	3 00
11.	Off-sets for Main Ring Gear, each	1 00
11½.	Off-sets for Main Ring Gear, each	1 00
13.	Top Clutch Lever	1 00
00.	Top Clutch Lever	1 00
14.	Main Leg Rear	8 00
16.	24-inch Sprocket	5 00
17.	7-tooth Sprocket	1 75
17½.	6-inch Gear	2 50
18.	Idler Arch Support	50
26.	Cover Hinges, each	35
126.	Cover Hinges, each	35
130.	Cover Hinges, each	35
32.	Right Hand Door Fastener	30
33.	Left Hand Door Fastener	30
48.	Door Fastener	30
49.	Door Fastener	30
35.	End Door Plates, each	25
131.	End Door Plates	25
135.	End Door Plates	25
B3.	8-inch Gears on Rollers, ea.	2 50
B3.	8-inch Gear, large hub, drives Rollers	2 00
BB.	Main Ring Gear	10 00
88.	Clutch, each	75
B1.	Pinion Meshing in BB	1 50

No.		Price.
	No number. Long Sleeve with small sprocket attached	$3 00
D30.	Door Frame, galvanized, 2 ft. 6 in. in length	8 00
AD30.	Door Frame, galvanized 2 ft. in length	7 00
90.	Lower Clutch Lever	75
91.	Arch Casting	1 00
171.	Chain Idler Arm	25
17¼.	Chain Idler Arm	25
172.	Rear Gudgeon	2 00
62 & 63.	Chain Idler	75
66.	Solid Chain Idler	75
62 & 63.	with wood center complete	1 25
B44.	Friction Clutch Yoke	50
45.	Rear Roller Bearings	75
45X.	Rear Roller Shifting Box	1 50
42.	Hoop Lugs	35
	Driving Shaft	2 00
	Pinion Shaft	1 75
	Clutch Shifting Shaft	25
	Butter Rolls, each	5 00
	Glass Holder	35
	Glass for same	10
	Roller Stuffing Box Glands, brass, threaded right and left, each	75
	Cover complete	2 00
	Cork and Cover Frame	50
	Sprocket Chains	3 00
	Spring Socket Back or Large Hub Gear	50
	Stud Pin for B4 10-inch Gear	75
15.	Box	50
14¼.	Cap	50
8½.	Box	75
2½.	Cap	50
7.	Cap	50

CLUTCH PULLEYS COMPLETE.

No.		Price.
	30x6-inch Pulley, complete	$12 00
	30x8-inch Pulley, complete	$16 00

EXTRS FOR CLUTCH PULLEYS.

No.		Price.
D2.	Flyer	$2 50
D3.	Shoes, each	1 50
B2.	Sleeve	1 50
	Friction Ring	$3 50
	Pulley, 30x6	6 00
	Pulley, 30x8	7 00

VICTOR GEARED MACHINE.

List of Extras required to change Fargo Victor from Chain to Geared Machine.

No.		Price.
6½.	12 Gear	$ 3 50
8½.	8½ Roller Gear	2 00
162.	11 Roller Gear	3 50
B4.	10 Roller Gear	3 00
B1.	4 Roller Gear	1 50
161.	Combined Gear	3 75
R7.	7 Combined Gear	2 50
A3.	Lower Gear Shifter	75
A4.	Top Shaft Bracket Pulley End	2 00
A6.	Top Shaft Bracket Back End	2 00
A5.	Bottom Shaft Frame	$ 6 00
A13.	Top Clutch Lever Lock	50
A90.	Lower Clutch Lever Bracket	1 00
E1.	Main Gudgeon	5 00
	3-inch Pinion, no No.	75
	Driving Shaft	2 00
	Pinion Shaft	1 75
	Two Frame Braces	1 00
		$42 00

To those wanting to change their chain machine to a geared machine we will make a net price on the above extras of $35.00.

VICTOR DAIRY CHURN EXTRAS.

For Style 1 and 2.

No.		Price.
XX.	Clamp Washer, each	$ 15
O7.	Main Gudgeon	3 00
O2.	Main Leg Front	6 00
49.	Lower Clutch Shifter	75
O6.	Top Shaft Frame	5 00
O5.	Bottom Shaft Frame	5 00
O40.	6-inch Sprocket	2 00
O20,	O24, O25 and O27 Box Caps each	50
O9.	Front Roller Supports, each	3 00
O4-2.	Off-set for Main Ring Gear, each	75
O48.	Top Clutch Lever	75
O4-14.	Main Leg Rear	6 00
O28.	22-inch Sprocket	5 00
O29.	5 " "	1 75
O46.	Idler Arm Support	50
Y6.	Cover Hinges, each	35
32.	Right Hand Door Fastener	30
33.	Left " " "	30
48.	Door Fastener	30
49.	" "	30
55.	End Door Plates, each	25
B.	7-in. Gears on Rollers, ea.	2 00
XXX.	Main Ring Gear	8 00
O1.	Clutch, each	75
1.	Pinion Meshing in XXX.	$1 50
O54.	Door Frame, galvanized	7 00
O57.	Lower Clutch Lever	75
45.	Chain Idler Arm	25
O8.	Rear Gudgeon	2 00
O52.	Solid Chain Idler	75
A4.	Friction Clutch Yoke	50
O50.	Rear Roller Bearings	75
O3.	Clutch Sprocket	1 00
4.	3-in. Pinion, grooved and slotted	1 50
OO26.	Rear Gudgeon Box	75
O22.	Front " "	75
	Hoop Lugs	25
	Driving Shaft	1 75
	Pinion Shaft	1 50
	Clutch Shifting Shaft	25
	Butter Rolls, each	5 00
	Glass Holder	25
	Glass for same	10
	Roller Stuffing Box Glands, brass, threaded right and left, each	15
	Cover, complete	2 00
	Cork for Cover Frame	40
	Sprocket Chains	2 00

CLUTCH PULLEYS.

20x4-inch Pulley, complete $12 00

EXTRAS FOR CLUTCH PULLEYS.

No.		Price.
22.	Flyer	$2 00
30.	Shoes, each	1 25
24.	Sleeve	1 25
	Friction	$3 00
	Pulley, 30x4	5 00

SIMPLEX.

Patented April 11, 1899.

COMBINED CHURN AND BUTTER WORKER.

Simple, automatic, practical. A combined machine that possesses all the advantages of the best independent churns and workers, and of any other combined churns, with none of the disadvantages of either.

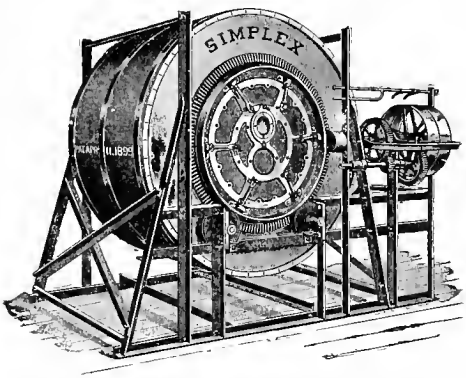


Fig. 1. Showing Machine with Cover on, for Churning.

No mechanism in churn drum when churning. Works the butter positively and uniformly. No bearings, journals, stuffing boxes or other contact surfaces in the churn drum. No loose heads to leak. No inaccessible parts that cannot be cleaned. Butter working performed in full sight and under full control of the operator. Butter delivered automatically from the drum without having to be handled with spades or ladles or dug out of churn. Butter can be salted while being worked, thus salting evenly. The heaviest and strongest combined machine. Heavy steel frame. Simple and improved gearing. Runs smoothly and noiselessly, with little power.

As can be seen from the cuts, the Simplex Combined Churn and Butter Worker consists of a strong wooden drum mounted in a substantial steel frame. The drum is supported in the back by an ordinary gudgeon or arbor, and on the front by a large cast iron ring, turned up accurately, which rolls on two turned wheels or rollers journaled to the frame. This makes the drum run very smoothly. The large gear rack is cast in one piece, so that it can mesh perfectly with the driving pinion at all points and run noiselessly. In the front head of the drum is a large opening (28 inches diameter) which is closed for the purpose of churning by means of a suitable churn cover provided with the customary cork packing, and an improved fastening which secures the cover tightly in place and making a seal that will not leak. The cover being in the head of the churn it is not subjected to the pres-

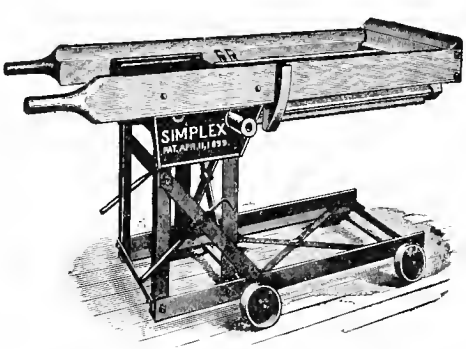


Fig. 2. The Butter Worker Attachment.

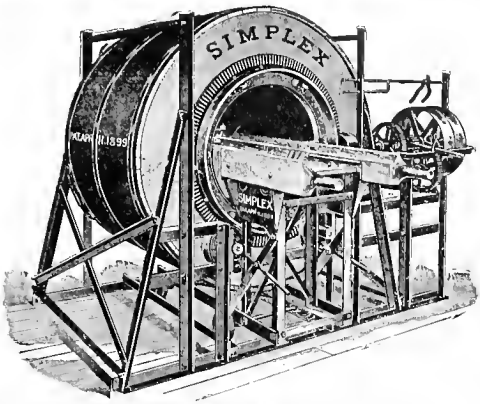


Fig. 6. Showing Butter Working Attachment in Position.

sure and concussion that the ordinary churn cover has to stand. The cream is run in through the opening in the large cover, this opening (6 inches diameter) being closed by a smaller cover or window of thick plate glass with iron rim and cork packing. A special funnel (not shown in cut) is furnished with every churn to assist in pouring in the cream if this is done by means of pails, otherwise the end of the conductor pipe can extend through the opening. In the opposite head of the drum there is another plate glass window, so that it is light inside of the drum and the condition of the cream or butter can be plainly seen. Where it is desirable to run the cream in at the back of the drum a small cover similar to that used on the front opening is provided. This is convenient when the cream room or cream vat is back of the churn.

PRICES, CAPACITIES, ETC.

No. 1½—100 Gallon Drum (Dairy Size).

Churns.....50 Gallons Cream
Works.....150 lbs. Butter
Shipping Weight.....680 lbs.
Floor Space.....4 ft. 10x3 ft. 6
Pulleys, tight and loose, 13x2 inches, to run at 100 revolutions per minute.
Price $100 00

No. 3—200 Gallon Drum.

Churns.....100 Gallons Cream
Works..... 300 lbs. Butter
Shipping Weight.....1,500 lbs.
Floor Space.....6 ft. 9x3 ft. 10
Pulleys, tight and loose, 18x4 inches, to run at 150 revolutions per minute.
Price $140 00

No. 9—600 Gallon Drum.

Churns.....200 Gallons Cream
Works.....600 lbs. Butter
Shipping Weight.....1,750 lbs.
Floor Space.....7 ft. 5x4 ft. 8
Pulleys, tight and loose, 18x4 inches to run at 150 revolutions per minute.
Price $160 00

No. 6—400 Gallon Drum.

Churns.....300 Gallons Cream
Works.....900 lbs. Butter
Shipping Weight.....2,500 lbs.
Floor Space.....8 ft. 2x6
Pulleys, tight and loose, 20x5 inches, to run at 135 revolutions per minute.
Price $200 00

Above prices are for painted frame and main castings galvanized. For full galvanized frame and castings, add for No. 1½, $10.00; No. 3, $15.00; No. 6, $20.00; No. 9, $30.00.

THE "SIMPLEX" PATENT DRUM BUTTER WORKER

Constructed on the same principles as the "Simplex" Combined Churn and Worker, with all its advantages.

POINTS OF SUPERIORITY.

Removable Rollers, so that every part may be easily cleaned and kept sweet.

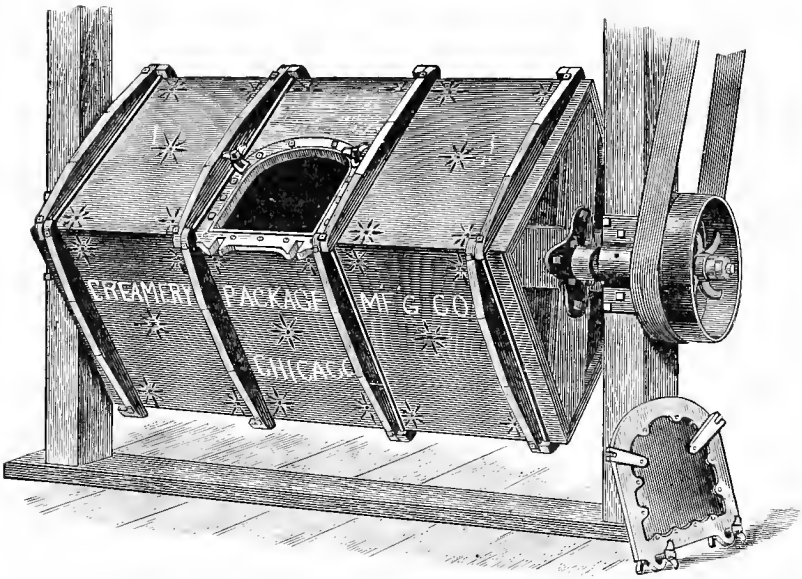
Positive in its Working, as the Butter must all go through the rollers.

No Danger of Overworking.

Ease, Neatness and Rapidity in Removing Butter from Churn.

Capacity Guaranteed.....300 lbs.
Floor Space.....6 ft. x 3 ft. 7 in.
Shipping Weight.....850 lbs.
Pulleys, tight and loose, 14x3 inches, to run at 100 revolutions per minute.
Price, with main castings galvanized and frame painted.....$80 00
For all parts galvanized, including frame, $10.00 extra.

SQUARE BOX CHURNS



SIZES AND PRICES

MADE IN CEDAR OR ASH

SIZE	Will Hold	Will Churn	Inches Square Outside	Inches Long Outside	PRICE
No. 1	100 gallons	50 gallons	34	33	$27 00
" 1½	150 "	75 "	34	44	32 00
" 2	200 "	100 "	34	55	36 00
" 2½	250 "	125 "	34	66	40 00
" 3	300 "	150 "	34	76	45 00
" 3½	350 "	175 "	34	86	50 00
" 4	400 "	200 "	34	96	56 00
" 4½	450 "	225 "	34	106	62 00
" 5	500 "	250 "	34	116	68 00

Churns without pulleys, list, less.....$2 75

Cedar Churns furnished with Babbited boxes. Pine and ash without Babbited boxes.

PINE

With Tight and Loose Pulleys

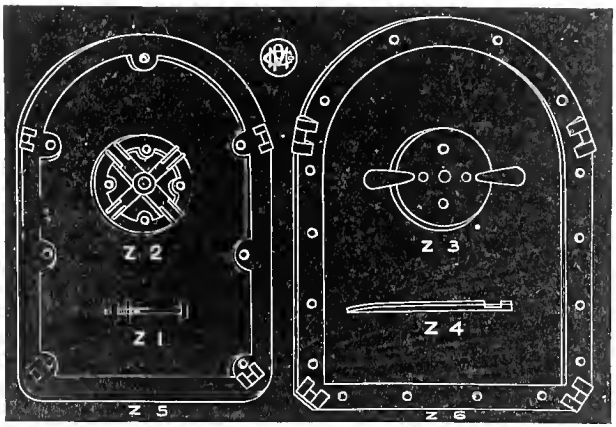
100 gallon churn, without frame ..$24 00
150 " " " " .. 28 00
200 " " " " .. 32 00
250 " " " " .. 35 00
300 " " " " .. 40 00
350 gallon churn, without frame ..$45 00
400 " " " " .. 50 00
450 " " " " .. 55 00
500 " " " " .. 60 00

SQUARE BOX FACTORY CHURN EXTRAS

COVERS AND RIMS—any style, Round or Oblong

Cover complete with churn rim.....each, $5 00
" without churn rim..... " 3 25
Churn rim without cover..... " 1 75

In ordering churn covers or rims always give **make** and **size** of churn and **style** of cover, whether oblong or round. If oblong give both inside diameters of the churn rim. If round give the one diameter of rim, also state whether the cover only or the cover and rim are wanted.



The above illustration represents the new style oblong cover that is generally used. It is a superior cover in many ways to any other style on the market.

COVER AND RIM EXTRAS—New Style Oblong

No. Z1.	Cover Bolt	each, $0 10	No. Z4.	Levers (4 in set)	each, $0 15
No. Z2.	Lower Button	" 30	No. Z5.	Cover Rim	" 1 25
No. Z3.	Upper Button	" 30	No. Z6.	Churn Rim	" 1 75

OTHER STYLES OF COVERS AND RIM EXTRAS

We also furnish a complete line of extras of other styles of covers and rims. In ordering always specify **make** and **size** of churn, and style of cover, whether oblong or round. In ordering oblong churn rim extras, give the inside two diameters of same. In ordering oblong cover rims give the outside two diameters. In ordering round cover rims and churn rims, give one diameter in the same manner as above. In ordering all other cover extras give same information as regards style of cover, and also number on part if there is any.

COVER CORK

½ in. x ½ in. (to replace the average cover with cork order 8 ft.).....per ft., 5 cts
⅝ " x ⅝ " (" " " " " 8 ft.)..... " 8 "

CHURN GUDGEONS—for Cedar Churn

1½ in. Short, each, $2 25; Long.....each, $2 75
1 7/16 " " " 2 50; Long..... " 3 00
1 11/16 " " " 3 00; Long..... " 3 50

For Other Styles

14-in. flange, with 1 11/16 in. shaft.....per set, $6 50
11 in. " " 1 7/16 in. " ..... " 4 40
8 in. " " 1 3/16 in. " ..... " 4 00
6 in. " " 1 3/16 in. " ..... " 3 25

TIGHT AND LOOSE IRON CHURN PULLEYS

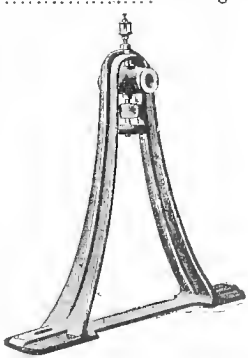
To fit any Style Churn

SIZES AND PRICES

20-in. diam., 4-in. face	$10 50	12-in. diam., 4-in. face	$6 50
18 " " 4 " "	9 00	14 " " 4 " "	7 00

IRON CHURN HANGERS

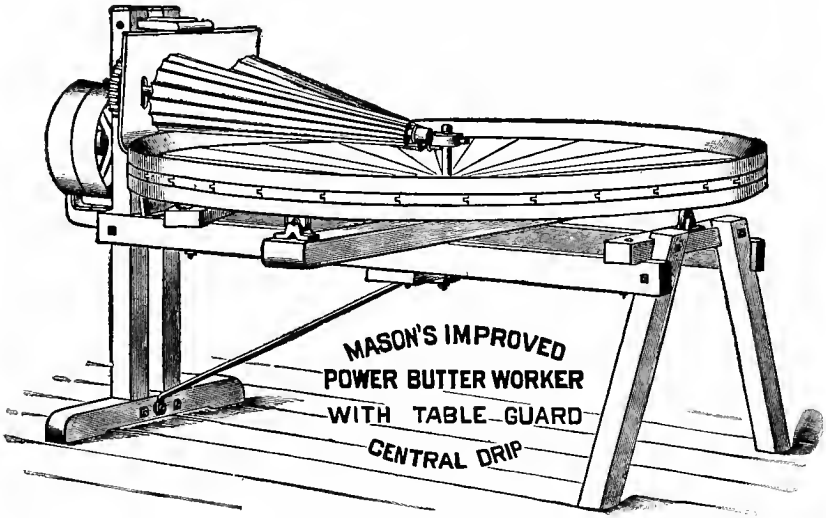
Price per pair, with oil cups.....$12 00
" " without oil cups..... 10 00



IRON CHURN HANGER

"MASON'S" IMPROVED POWER BUTTER-WORKER

Number 2



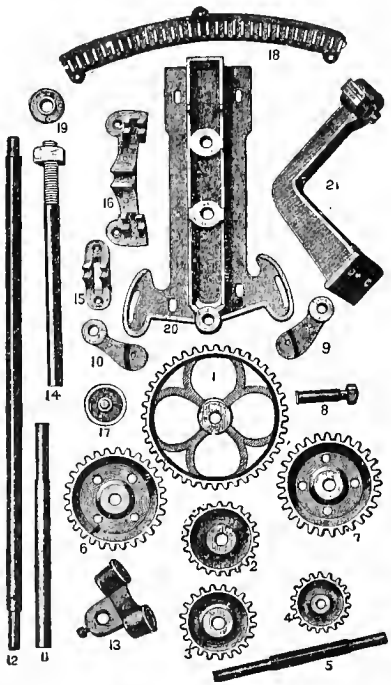
PRICE

With black castings, plain table	Weight, 330 lbs.,		$50 00
" " " table guard	" 335 "		55 00
" galvanized castings, plain table	" 330 "		60 00
" " " table guard	" 335 "		65 00

Size of pulley, 12x3 inches. Revolutions per minute, 60.

Capacity, 200 lbs.

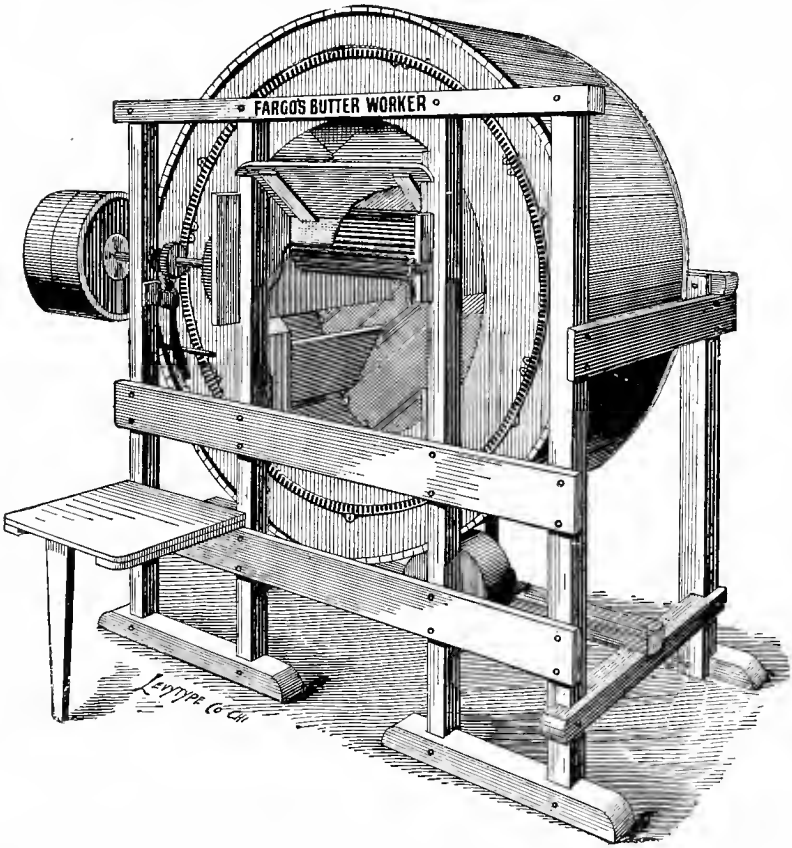
EXTRAS FOR MASON'S POWER BUTTER WORKERS



No.		Galvanized. Price.	Plain Price.
1.	Large gear wheel, held to journal frame with No. 8	$1 20	$1 00
2.	Center gear wheel, runs the pulley shaft No. 1	90	75
3.	Lower gear wheel, fastened to shaft No. 5	90	75
4.	Pinion on short shaft, turns the table, connects with No. 18	90	75
5.	Short shaft, fastened to Nos. 3 and 4	90	75
6.	Gear wheel for right hand roller, stand behind the pulleys	90	75
7.	Gear wheel, for left hand roller, stand behind the pulleys	90	75
8.	Wrist pin, No. 1 gear wheels turn on	90	75
9.	Left hand ear, holds No. 7 in place	35	25
10.	Right hand ear, holds No. 6 in place	35	25
11.	Pulley shaft, the pulleys and No. 2 on this shaft	75	75
12.	Roller shaft, both shafts alike, for corrugated rolls, each	75	75
13.	Head block, holds the end of rolls, center of table	1 25	1 25
14.	Center pin, holds No. 13	50	50
15.	Single chair for the travelers, No. 17, each	35	25
16.	Double chair for the travelers, No. 17	60	50
17.	Travelers, run in Nos. 15 and 16, each	12	10
18.	Track, about 30 pounds, per pound	12	08
19.	Thimble, goes on the center pin, No. 14	20	15
20.	Journal frame, the large casting, bolted to the frame	3 50	3 00
21.	Elbow, holds No. 11 in place	1 45	1 25
	Corrugated wood rolls, each	2 25	2 25
	Tables with plain castings, each	....	12 00
	Tables with galvanized castings, each	.....	13 00
	Tables with galvanized castings and raised sides, each	.....	18 00
	Pulleys	2 00	1 50

ORDER BY NUMBER.

"ALPHA" DRUM BUTTER WORKER



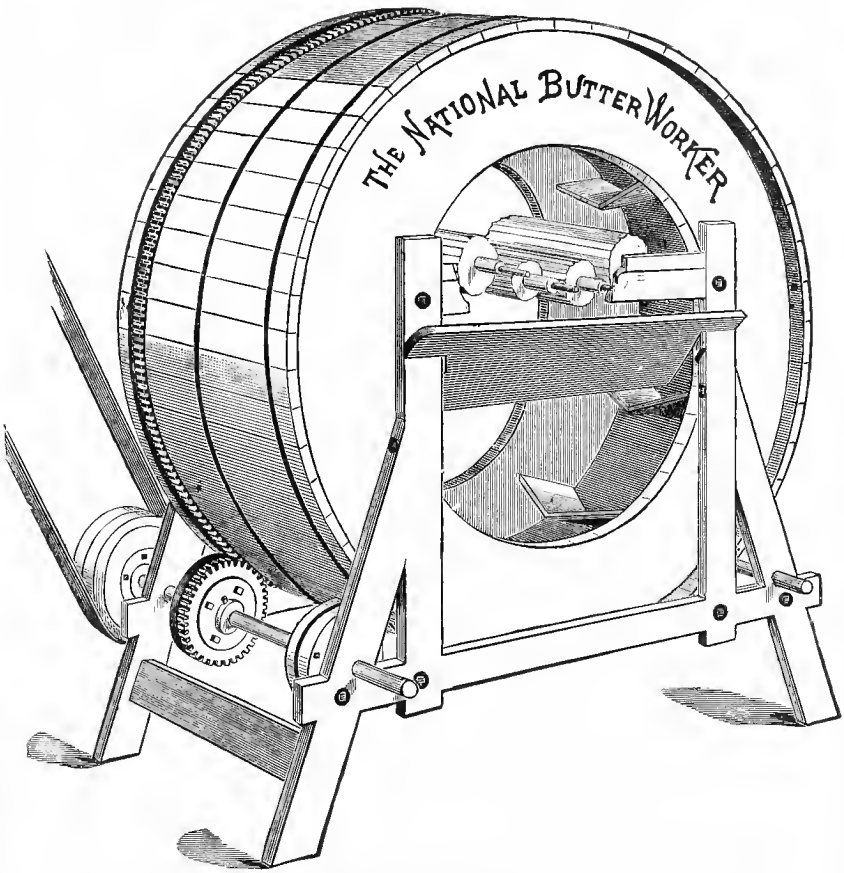
Size of pulley, 20x6. Revolutions per minute, 40. Capacity 300 lbs.
Weight, 700 lbs.

Price, each $75 00

EXTRAS

Clutch Pinions	$1 50
9-inch Gears	1 25
Pinion Lever	50
Gudgeon Levers	1 00
Shaft	75
Track, 8 sections to a set, per section	30
Wood Rollers, each	2 25
Inside Boxing	8 00
Iron Boxes, per set	75

"NATIONAL" DRUM BUTTER WORKER



Size of pulley, 18x4. Revolutions per minute, 50. Capacity, 300 lbs.
Weight, 820 lbs.

Price, each $75 00

EXTRAS

No. 1, Large Gear Wheel	$ 1 00
" 23, Small " "	75
" 9, Large Sprocket Wheel	1 75
" 10, Small " "	1 50
" 11, Driving Gear to Drum	1 20
" 12, Track for Drum, per section	50
Shaft	1 25
Rollers and Collars for same	1 30
Rear Shaft	1 50
Sleeve, each	50
Wooden Wheels on Butter Carrier, each	25

We can also furnish full line of extras for the following Factory Butter Workers:

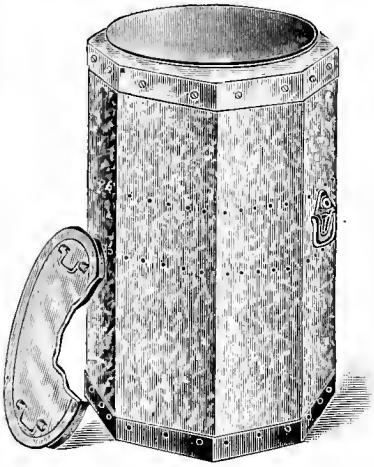
Fairlamb	Fargo "Mason"	Rice	Embree
Seaver	Barber "Mason"	Reid	Eureka

CREAM CARRYING CANS.

THE VALERIUS

ALL STEEL JACKET.

This is the strongest and most substantial cream can built. It is full galvanized, steel jacketed with heavy band to protect top and bottom.



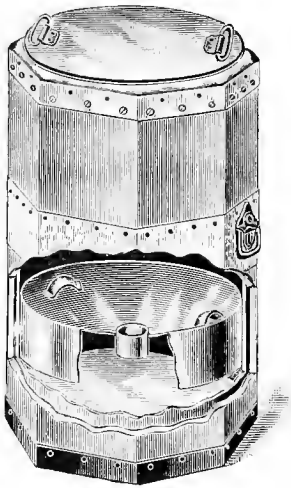
It is a jacketed can, being a tin can surrounded by a stout casing of wood which thoroughly protects it from damage in handling, and from changes in temperature, from exposure to the sun. Like all good transportation cans, it has a plunger cover which goes the whole depth of the can, resting on the cream, and also a supplementary cover on top of the can.

In this can the cover has a close fitting iron joint and a thick wood lining which protects the top of the can. This can is particularly desirable for railroad use.

SIZES AND PRICES.

20-gallon can..... each, $10 00
30 " " ..... " 11 00

THE IDEAL.



This can is constructed exactly like the steel jacket can except that it is finished on the wood casing with a galvanized steel band around the middle. It will not stand so much rough usage as the more expensive can but will give good service for wagon use.

SIZES AND PRICES.

20-gallon can..... each, $8 50
30 " " ..... " 9 50

REFRIGERATOR TANK.

SIZES AND PRICES.

	Length.	Width.	Depth.	Gallons.	Price.
No. 0.....	38 inches.	34 inches.	31 inches.	80	$23 00
" 1.....	53 "	35 "	31 "	120	28 00
" 1½.....	.. "	.. "	.. "	160	32 00
" 2.....	76 "	36 "	30 "	180	35 00
" 3.....	88 "	37 "	31 "	250	45 00

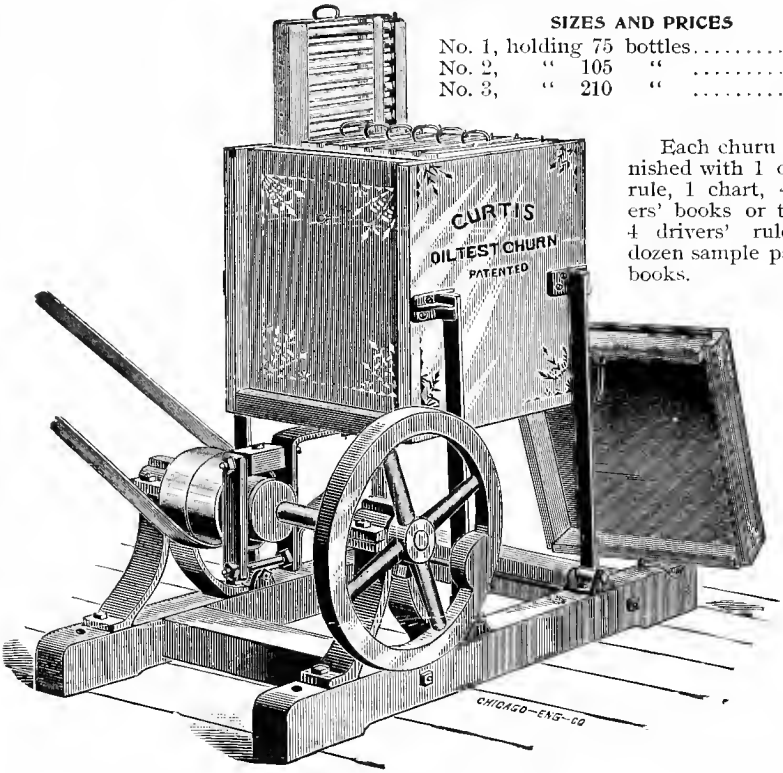
OIL TEST CHURNS

CURTIS

SIZES AND PRICES

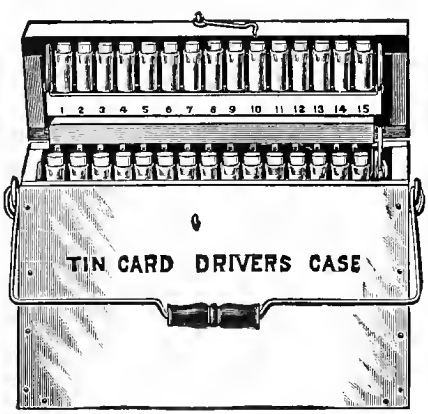
No. 1, holding 75 bottles		$45 00
No. 2, " 105 "		55 00
No. 3, " 210 "		80 00

Each churn is furnished with 1 oil test rule, 1 chart, 4 drivers' books or tablets, 4 drivers' rules, ½ dozen sample patrons' books.



DRIVERS' CASES

Drivers' case, wood cards, holding 45 bottles, for Curtis Churn	$2 00
Drivers' case, wood cards, holding 30 bottles, for Curtis Churn	1 75
Drivers' case, tin cards, holding 30 bottles, for Curtis Churn	2 75
Drivers' case, tin cards, holding 45 bottles, for Curtis Churn	3 50
Price does not include bottles.	
Tin cards for Curtis Churn, each	1 00
Wood cards for Curtis Churn "	50
Drivers' case for Fargo Churn, wood, holding 35 bottles	2 00
Drivers' case for Fargo Churn, iron, holding 35 bottles	2 50
Improved case and holder for Conqueror Churn	2 75
Case without holder	1 00
Bottle holders	1 75



PUNCHES

No. 1, each	$2 00
No. 3, each	1 50

TEST CHURN SUPPLIES.

TEST TUBES.

9-inch plain test tubes, with corks, per hundred $6 00
9-inch lip test tubes, with corks, per hundred..... 6 00
10-inch plain test tubes, with corks, per hundred 6 00

TEST BOTTLE BRUSHES.

For hand use, each 20 cents, per dozen $2 00
Curtis' improved. each 25 cents, per dozen 2 50

DRIVERS' BOOKS AND TABLETS.

Tablets for Conqueror churn, per dozen $1 50
Books, stiff covers, per dozen..... 85
Books, paper covers, per dozen 90

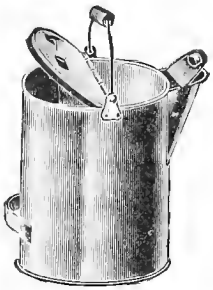
PATRONS' BOOKS.

Common, per dozen $0 50
A and B, per dozen..... 75

RULES.

Steel, eighths or tenths...per doz., $4 00
Wood, eighths .....each, 15
" " .....per doz., 1 50
Wood, tenths.....each, $0 15
" " .....per doz., 1 50
Oil test rules (Burchard) ....each, 50
" " " (A. and B.).... " 24

ROE'S SKIMMING PAILS.



These pails are made of XXX tin, with cover and spout. They are designed to be used for cream gathering, and are so made that one inch in depth makes a standard gauge of cream.

Price.....$2 50

DRIVERS' PAILS.

With supported bottom, each....$2 50
Without supported bottom..... 2 25

CORKS.

Corks, extra quality test tube, per gross..... $0 75
Corks, common test tube, per gross..... 40

RUBBER.

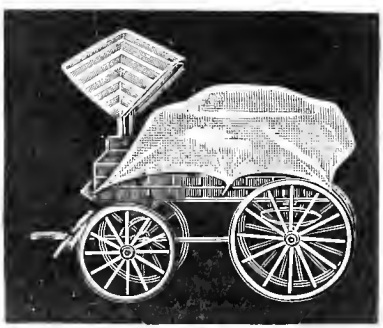
No. 7, for test tubes, per hundred $1 50

TEST CHURN SUPPLIES

Cream Ledgers, 100 pages	each,	$1 25
" " 200 "	"	1 75
" " 300 "	"	2 50
Roe's Drivers' Cream Books, will keep 100 monthly accounts	per doz.,	2 00
Checks, printed to order	per M.,	3 00
Frink's Oil Test Chart	each,	2 50
Ready Reckoner, for oil test (Curtis)	"	25
" " " " " (A & B)	"	25
" " " " " (Kamp)	"	50
Shipping Tags, printed to order	per M.,	1 90
" " " "	per 500,	1 00

WAGON COVERS

WHITE CANVAS



These covers are made of the best quality of goods of grade listed, and the preparation used thereon is such as to render them perfectly waterproof. These covers are guaranteed not to stick together from heat.

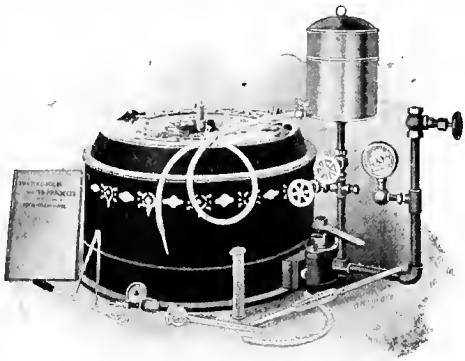
SIZES AND PRICES

SIZE.	8-oz. Duck Single Filling.	10-oz. Duck Single Filling.	12-oz. Duck Double Filling.	13-oz. Duck or No. 10.	15-oz. Duck or No. 8.	18-oz. Duck or No. 6.	20-oz. Duck or No. 4.
5½x 9	.....	.....	.....	$ 3 80	$ 4 20	$ 4 80	$ 5 10
5½x12	.....	.....	.....	5 05	5 60	6 30	6 95
7 x12	.....	.....	.....	6 45	7 15	8 15	8 70
7 x15	$ 2 90	$ 3 65	$ 5 60	8 05	8 95	10 15	10 85
10 x16	3 90	4 80	7 45	12 30	13 60	15 50	16 55
10 x17	4 15	5 10	7 90	13 05	14 45	16 45	17 60
10 x18	4 40	5 40	8 40	13 80	15 30	17 40	18 60
12 x14	4 25	5 25	8 10	12 90	14 30	19 25	17 35
12 x16	5 00	6 00	9 30	14 75	16 35	18 55	19 85
12 x18	5 50	6 75	10 45	16 55	18 35	20 90	22 80
12 x20	6 15	7 50	11 65	18 40	20 40	23 20	24 80
14 x16	6 50	7 95	11 20	17 20	19 05	21 65	23 15
14 x18	7 30	8 95	12 60	19 35	21 40	24 35	26 05
14 x20	8 15	9 95	14 00	21 50	23 80	27 10	28 95
14 x22	8 95	10 95	15 40	23 60	26 20	29 80	31 80
14 x24	9 75	11 95	16 80	25 75	28 55	32 50	34 75
16 x16	7 45	9 10	12 80	19 65	21 75	24 75	26 45
16 x18	8 35	10 25	14 40	22 10	24 50	27 85	29 75

No. 8, White Duck, sheds water, per square foot ..... 5½c.
10 oz, " " for dust and rain, per square foot 4½c

THE IDEAL STEAM TURBINE BABCOCK TESTER.

THE IMPROVED IRON FRAME.



The most convenient, compact and complete tester ever offered.

In the new Ideal we have introduced a number of novel features in a Babcock Tester which will be appreciated by everyone. Briefly we may mention the special features of our new Tester as follows:

Light head,—Two bearings,—Three-way steam inlet valve,—Steam brake,—Cast iron frame and cover, with cover hinged,—Ball bearing,—Solid cast turbine,—Seamless brass pockets,—Separate compartment for turbine,—Independent steam inlet for heating testing chamber,—Head perfectly balanced;—Fitted with steam gauge,—Brass syphon,—Water heating reservoir with Bottle-filling attachment, etc.

THE IDEAL TESTER

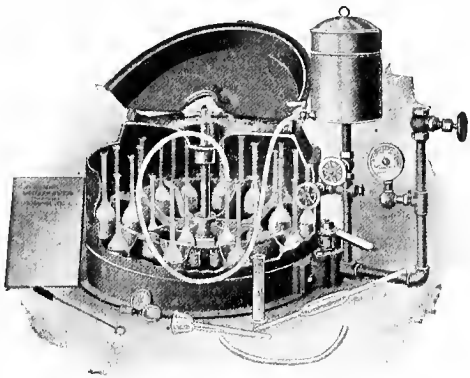
When first introduced, was far superior to other testers then upon the market. We believe that in the new improved Ideal we have again scored a distinct success in surpassing all Babcock Testers now upon the market.

THE IMPROVED IDEAL.

Is now made in two sizes only. Cast Frame—The solid cast iron frame forms the ground work for a substantial machine that is practically indestructible. Cover—The cover hinges across the center, laying perfectly flat when opened, avoiding any possibility of its falling shut unexpectedly. Pockets—The pockets for holding test bottles are easily removed, but when attached are firmly locked in position, so that they cannot by any possibility fly off when in motion. The pockets are hinged, so that when at speed they take a perfectly horizontal position. This is important, as accurate reading cannot be made with bottle in sloping position, as the oil will stand higher on one side of glass than on the other. All running parts are of brass. Uses Little Steam—Owing to the lightness of the head and perfect control of steam inlet very little steam is required,

THE IDEAL STEAM TURBINE BABCOCK TESTER

THE IMPROVED IRON FRAME.



Sectional View of Head with Pockets.

COLD AIR INLET.

In the cover near the center is an opening provided with an adjustable slide to close. This enables the operator to allow as much cold air to be drawn into the machine while in operation as may be necessary to keep the tests at the proper temperature.

THREE-WAY INLET VALVE.

This valve gives the operator perfect control of the tester at all times. As soon as the test is finished, by throwing the valve the steam is admitted in the opposite direction, the steam itself acting as a brake and bringing the machine quickly to a stop. Bearings—The two bearings hold the machine perfectly true and prevent it from getting out of balance; also avoid loss of power from excessive vibration. The separate inlet, introducing steam into testing chamber, permits the holding of the test as long as desired before reading.

HOT WATER RESERVOIR.

The hot water reservoir is an innovation that will be especially appreciated. The water in tank can be kept hot by jet of steam at the bottom. The operator, with hose pipe between thumb and finger, can fill bottles more accurately than with pipette. This attachment simplifies a very annoying part of milk testing. The hot water supply is always right at hand. It can be used without any delay.

The complete outfit consists of the machine with full set of milk bottles, acid measure, funnel, pipette, bottle brush, speed indicator and Farrington & Wall's book on milk testing.

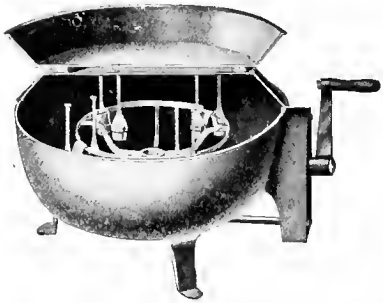
Each machine is test at high speed before leaving our shops. We guarantee each machine to be perfect and our glassware accurate.

SIZES AND PRICES:

Complete with Steam Gauge, Speed indicator and Glassware.

24-bottle	$35 00
32-bottle	40 00
24-bottle, large size for long neck cream bottles	50 00

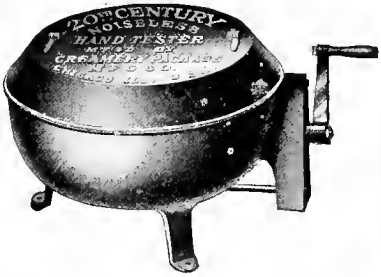
BABCOCK MILK TESTERS



THE 20th CENTURY NOISELESS HAND.

In constructing this tester we have followed the same general line as our Turbine machine.

There is no hand tester on the market equal to it in grace of design, ease of operation and accuracy of result. It has cast iron case with hinged cover. It is operated with machine cut spur and worm gear. The outside gear enclosed. The bottle pockets are arranged in pairs and are made of seamless brass. These are held firmly in place on the head but swing easily and take a perfectly horizontal position when in motion.



With this test a large dairy or creamery not supplied with steam can secure just as accurate tests as can be made with the Turbine machine.

SIZES AND PRICES

Complete with glassware.

8 Bottle	$10.00
10 "	12.00
12 "	14.00
24 "	25.00

THE "IDEAL" HAND POWER

For Use in Small Dairies or on the Farm

We make this machine in two sizes, 2 and 4 bottles. They are very compact and simple, and if directions are followed we guarantee them to be accurate. They are designed especially for dairymen and farmers, but should be in the hands of every one who keeps a cow. Hotels and restaurants find them indispensible, while they are largely used in laboratories and by physicians in analytical work.

THE "IDEAL"

It is large enough to answer the purpose of an average size dairy, and cheap enough for those who keep a single cow.

With each machine is furnished necessary glassware and acid sufficient for a number of tests.

PRICES

2-bottle, complete ..... each,	$3 50
4 " " ..... "	4 50

Delivered free to express companies. If to be shipped by freight add 15 cents for cartage.

EXTRAS FOR BABCOCK TESTERS

"CREAMERY PACKAGE MFG. CO." STYLE

PARTS FOR "IDEAL" TURBINE TESTER

Name.	Price.
Body	$....
Flyer	4.00
Diaphragm	2.00
Spindle and Point	2.00
Nozzle	1.75
Cover	2.50
Steam Gauge	4.00
Steam Gauge Syphon	.75
Speed Indicator	1 25
Steel Ball	.25
Upper Brouze Bushing	1.50
Lower Bronze Bushing	$1.50
Bottom Plug and Nut	.50
Cups, each	.40
No. 173. 40-Bottle Head, complete	6.50
" 176. 40 " " Ring	.40
" 172. 32 " " complete	5.00
" 176. 32 " " Ring	.40
" 171. 24 " " complete	3.50
" 175. 24 " " Ring	.30
" 170. 20 " " complete	3.00
" 177. 20 " " Ring	.30

PARTS FOR IMPROVED IDEAL TURBINE TESTER

Flyer and Spindle	each,	$6.00
3-Way Valve	"	6.00
Hinged one-half Cover	"	1.50
Steam Gauge	"	4 00
Steam Gauge Syphon	"	.75
Speed Indicator	"	1.25
Steel Ball	each,	$0.25
Cups	"	.50
24-Bottle Head	"	3 50
32 " "	"	4 00
Hot Water Tank	"	1 00
Hose	"	.20

PARTS FOR "ROE" PATTERN HAND TESTERS

No. 155.	Body	each,	$....
" 165.	Crank Wheel, complete	"	0 75
" 159.	Crank, separate	"	.25
" 158.	Small Spur Gear	"	.15
	Small Bevel Gear	"	.15
" 168.	Large Bevel Gear	"	.25
" 167.	4-Bottle Head	"	.50
No. 166.	8-Bottle Head	each,	$1.25
" 164.	12 " "	"	2.00
	Cover	"	1.00
	Cups	"	.25
	Drip Cock	"	.40
	Vertical Shaft	"	.15
	Horizontal Shaft	"	.25

PARTS FOR "IDEAL" HAND TESTERS

No. 152.	Standard	each,	$1.25
" 151.	Crank Wheel	"	.75
No. A2.	2-Bottle Head, complete	each,	$1.00
" A3.	4 " " "	"	2.00

Tin Bottle Cups ..... per pair, 75 cts

"RUSSIAN" BABCOCK TESTERS

PRICES

Complete with Glassware

12-Bottle	each,	$50 00
24 "	"	75 00

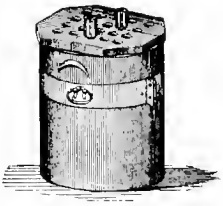
EXTRAS

Spindles	each,	$0 75
Bushings	"	.75
Screw and Nut	"	50
Bottles	"	.20
Tubes	"	.25
Skimmed Milk Tubes	"	.25
Cream Tubes	"	.25
Speed Indicators	"	.10
Bottle Cleaners	each,	$ 0.10
Steel Points	"	.10
New Head	"	35.00
New Frame	"	15 00
Russian Pipette, 8, 8 CC	"	1.50
Russian Acid Dipper	"	.50
Pair of Tongs	"	.15
Bottle Stand	"	.50

Tube Cleaner ..... each, 10 cts

"BABCOCK" TEST SUPPLIES

THE "BABCOCK" WASTE JAR



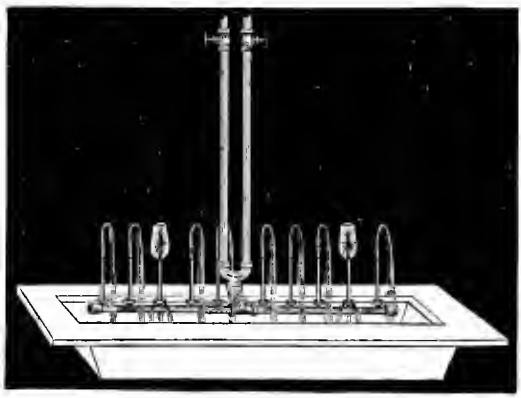
We represent herewith illustration of our Waste Jar, which will be found very convenient in connection with the testing operation. After reading the fat, bottles are placed neck down in the holes of the cover, which is fitted over the jar.

The jars are bound with a heavy galvanized steel band fitted with handles.

PRICE

Complete with cover and iron-bound five-gallon stone jar, as illustrated.....$2 50

THE "BABCOCK" BOTTLE RINSER



A thorough rinsing of the test bottles with boiling hot water by means of our "Babcock" rinsing device, will be found very convenient and advantageous. It removes all the grease and dirt as well as acid solution from the inside of the bottle.

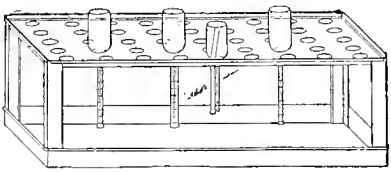
It is so arranged that cold water and steam can be turned on independently.

Every factoryman will find this device to be one that will serve every purpose for which it is designed. They are made in two sizes.

PRICE

No. 1, to clean 10 bottles, complete, as per cut, except sink..... $ 7 20
" 2, " 20 " " " " " " 12 00

THE "BABCOCK" BOTTLE DRAIN RACK



This galvanized rack will be found a great convenience in every factory. When the bottles have been rinsed in our Rinser, they are placed in an inverted position to drain, as shown in the attached illustration. They are kept here until needed.

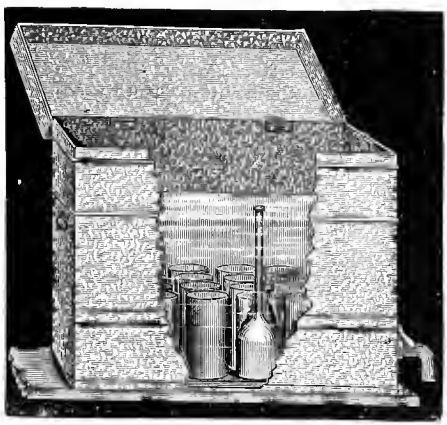
The bottles being inverted cannot catch any dust and thus will be in better shape for the next test.

PRICE

To hold 50 bottles, complete..... .....$2 00

"BABCOCK" TEST SUPPLIES

THE "BABCOCK" TEST BOTTLE BATH



We represent herewith a test bottle bath which will be found very convenient and essential to those who wish to make perfect tests.

The amount of unseen fat that clings to glassware is generally insufficient to be noticed in the results obtained from testing whole milk, but it plays an important part in testing samples of separator skimmed milk.

It may be readily noticed by making a blank test with clean water in bottles which have been used for testing ordinary milk, and have been cleaned by simply draining the contents and rinsing once or twice in hot water.

At the conclusion of the test the operator will often find that a few drops of fat, sometimes enough to condemn the separator, will collect in the neck of the bottles, although the water tested has not been near a separator.

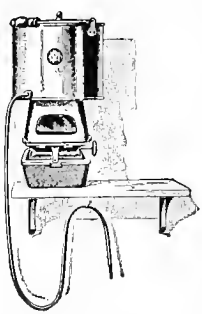
Boiling hot water will generally clean the grease from glassware for a time, but all test bottles should, in addition, be given an occasional bath in some alkali or other grease-dissolving solution.

After having rinsed the bottles thoroughly with hot water they should be placed in a hot solution kept in the tank where they can be left entirely covered with the liquid. The tank is provided with a small faucet at the bottom, thus allowing the liquid to be drawn off when test bottles are wanted. A tablespoonful or so of our "Ideal" Cleansing Powder to about two gallons of water will make a very satisfactory cleansing solution. The cleansing properties of this solution are increased by warming the liquid. The test bottles must be rinsed twice with hot water after they are taken from this bath.

PRICE

Galvanized iron, complete with removable racks, to hold 24 bottles.....each, $3 50
" " " " " " 40 " ..... " 4 50

COMBINED "BABCOCK" TEST WATER HEATER & BOTTLE FILLER



A combination that every one using a Babcock Tester needs. It is composed of the following parts:

COVERED KETTLE—Retinned, extra heavy, fitted with nipple for hose, size 8 x 6½ in., capacity 4 quarts, each, $ 50

LAMP STOVE—Cast Iron Oil Tank, hinge top, nickel front, 1 burner, height 8½ inches, tank 3½ x 5½ in., complete, with wick.....each, 1 05

MOHR'S PINCHCOCK, nickel plated..... " 25

PIPETTE TUBE, best glass with drawn point, length 2½ in. Price .....each, 10

PURE RUBBER HOSE, 3 ft. length by 3-16 inch diameter, per length 50

PRICE OF COMPLETE OUTFIT

Including covered kettle, lamp stove, pinchcock, pipette tube and hose..... $2 50

MILK TEST SUPPLIES

GLASSWARE

17½ c. c. Pipette

Milk Bottle

Cream Bottle

Greiner's Pipette

Acid Measure

Dividers

Funnel

5-9 c. c. Pipette

PRICES

Milk Bottles	each, $0 ..	per dozen, $....	
Cream Bottles	" ..	"	
Skimmed and Buttermilk Bottles	" ..	"	
Milk Bottles for Beimling Tester	" ..	"	

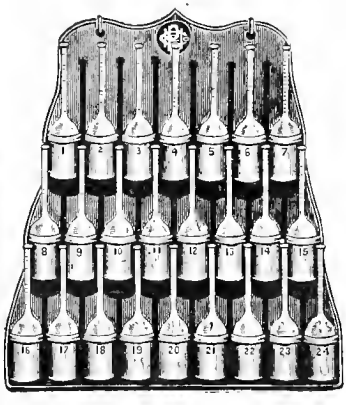
Our Test Bottles are all frosted on the breast of bottle so that they can be numbered with a lead pencil.

Acid Measure	each, $0 ..	per dozen, $....
Funnels for Babcock Test Bottles	" ..	" ....
17½ c. c. Pipette	" ..	" ..
15 c. c. Pipette for Beimling Test Bottles	" ..	" .. .
5-9 c. c. Pipette	" ..	" ....
Greiner's Pipette	" 1 00	⅓ size....each, 1 00

GREINER PIPETTE EXTRAS

Rubber Bulb	each, $0 20
Pipette Bulb	" 35
Large Glass Bulb	" 30
Rubber Connection	" 15

Our Glassware is all tested in our laboratory and we guarantee it correct



DIVIDERS

The reading of the test is facilitated very much by the use of the Dividers. It also eliminates the liability of error in reading the test.

Price ....per pair, $0 40

BABCOCK TEST BOTTLE RACK

This rack is made of tin and hangs flat against the wall, but the bottles stand upright and are easily filled. The racks are made in all sizes, to suit the number of patrons at any factory.

SIZES AND PRICES

24-Bottle Rack	each, $1 50
26 " "	" 1 75
42 " "	" 2 00
54 " "	" 2 25
64 " "	" 2 50

For Prices not given see our Monthly Price Current

AUTOMATIC PIPETTES.

WAGNERS' "UP-TO-DATE."

TO USE WITH THE BABCOCK TEST

THE NEATEST AND MOST CONVENIENT PIPETTE EVER PUT ON THE MARKET

DIRECTIONS

The mouth is applied to the slanting tube and milk drawn up until it is above the glass cock, then the cock is closed and the measured milk is put in the test bottle. Should there be an overflow same will be caught in the large glass overflow bulb or extension of slanting tube. This overflow bulb can be detached from the Pipette and emptied when desired.

Price, complete, - - - - each, $1.25

EXTRA

Overflow Bulbs	each,	$0.35
Pipettes	"	.85
Rubber Stoppers	"	.10

Russian.

RUSSIAN.

This Pipette is used in much the same manner as the above style. It is preferred by some to the Up-To-Date. We are prepared to furnish any style of automatic pipettes on the market. We can also supply extra parts for same.

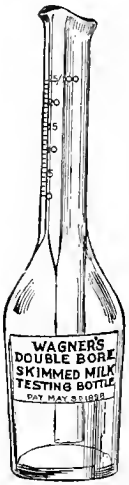
Price, complete, - - - - - - each, $1.00

COMBINED ACID BOTTLE

Just the simplest thing imaginable, and it always works. Tip the bottle up until the pipette at the side is full up to the mark near the top, and when the bottle is returned to an upright position, the surplus flows back into the bottle again and the pipette is left full up to the mark, and contains exactly 17.5 c. c. The contents of the pipette may be then emptied by turning the cock at the bottom. This apparatus has the advantage of having no rubber connections and bulbs to wear out, and it is very simple and easy to work.

Price, each - - - $3.00

DOUBLE BORE SKIM MILK TEST BOTTLES.



WAGNER'S AND OLSON'S "B. & W." TEST BOTTLE.

For accurately determining the percentage of Fat left in skim milk or butter milk.

Reads down to one one-hundredth of one per cent. fat.

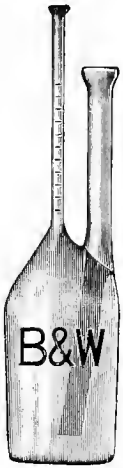
One tenth of one per cent. can be read as accurately and as easily as one whole per cent. in the ordinary Babcock bottle.

Tests cannot be spoiled by overflowing with hot water.

Uses but one-half as much acid as the ordinary Skim-milk bottle.

Invaluable to any owner or user of a cream separator, as it tells him just how to regulate the capacity of his machine so that the loss in the skim milk will be reduced to a minimum.

Price.....each, $0 60
" .....per doz., 7 20



THE IDEAL BABCOCK BOTTLE TESTER.

For testing the accuracy of the graduations on the neck of the bottles.

We have devised this tester for accurately and rapidly testing the graduations in the neck of the Babcock Milk Bottles, and it supercedes the unhandy and difficult mercury test heretofore so universally used.

This little instrument will test for two points without removing it from the bottle, and is always ready for use without auxiliary attachments, such as pipettes, mercury, corks, etc.

To make a test it is only necessary to fill the bottle with water (or milk, which is preferable) so that highest point of the liquid is even with the o mark.

Then slowly lower the tester into the bottle until the liquid rises half way between the two sections, and at that point should be the 5 per cent. mark.

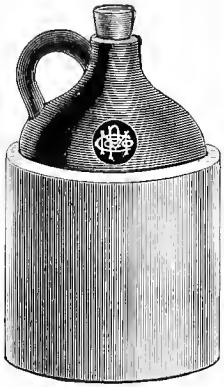
After that point is tested for and established, slowly lower the entire tester into the bottle so that the liquid rises over the top of the upper section about one-eighth of an inch, and if the bottle is correct the top of the liquid should be at the 10 per cent. mark.

Endorsed by all creamery men who have seen and used it.

Price milk bottle.....each, $0 35
Price cream bottle..... each, 60

MILK TEST SUPPLIES.

ACID.



ACID JUG

To get a reliable test, it is absolutely essential that the acid be of the proper strength. We get the best article procurable, direct from the manufacturer, and test before sending out. We *guarantee* it to be of the proper strength.

PRICE

IN SINGLE GALLON LOTS

In jugs, per gallon..... Boxing .....
Jugs, extra .....

IN CARBOYS OF 10 TO 12 GALLONS

Per gallon ..... Carboys, extra.....

Carboys returned will be credited at billing price, less freight and carting, providing they are complete.

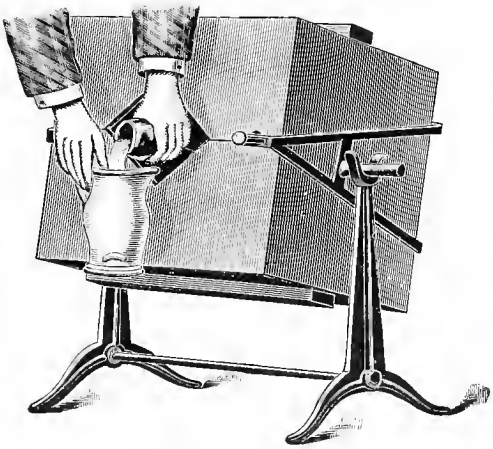
COMPOUND FOR BEIMLING TEST

No. 1, per gallon ..... No. 2, per gallon.....

Jugs and packages extra.

See monthly prices current for quotations.

IMPROVED CARBOY TRUNNION



TRUNNION AND CARBOY

By the use of this trunnion a man alone can pour out any quantity with perfect ease and safety, without risk of injury to clothes or person; thus doing the work of two men in the old awkward way of tipping the carboy over on the ground floor, and in one-tenth of the time. There is no safer or better receptacle for keeping Acid, than a clean glass boxed carboy, when set up in the Improved Carboy Trunnion, as it sets in a position easily controlled by one finger, and any quantity can be drawn out easily by a child without possible accident.

PRICES

Set complete.....$4 00
Improved pitcher for handling acids, 1-gal. size..each, 75

RUBBER CARBOY CAP

By the use of this Cap will be found the only convenient way to close up the mouth of a carboy tightly; and this is very essential where Acid is contained in them, as it loses much of its strength by absorption of moisture from the atmosphere when exposed to the air, and a tight-fitting cover for mouth of carboy prevents dirt or dust getting into the contents.

Price $1 00

RUBBER CARBOY SPLASH PREVENTER

By putting this splash preventer over the mouth of a carboy, liquid contents flow out in a steady stream, without gulping or splashing out, as is usual in pouring directly from mouth of carboy.

Price.....$1 50

THE EQUITY MILK SAMPLER.

Sampler shown above complete and ready for use.

The new way of taking composite samples of milk at the creamery or cheese factory weigh can. Always ready for instant use; rapid, easily operated, easily cleaned; no dripping of milk; no wet fingers, no spilling of sample. Takes a sample always proportioned so quantity of milk as well as quality. two weeks' sampling takes enough for a test from the smallest patron and not too great a bulk from the largest deliveries. This device has been privately tested for two years in actual creamery use and is now offered as perfect in design and construction, (see letter below). It is all a good milk sampler ought to be.

The Equity milk sampler is strongly made of hardened brass, handsomely nickeled plated, polish finish. Cut shows sampler in position for use as it would be when fastened to rim of weigh can.

Price, each..... $5 50

(Tube should be of a length to correspond with depth of weigh can—state inside depth of can in your order.)

AMES, IOWA, April 16, 1901.

MR. J. KOLARIK,
Chicago, Ill.

Dear Sir:—We have used your Equity milk sampler at our school part of the winter and summer and found it to be practical and accurate. The benefit of a sampler such as yours over the little dipper is that we get a uniform test or sample from the top to bottom of the milk. With little dipper it is almost impossible to get a uniform test, as the cream rises to the top very quickly.

G. L. McKAY, Professor of Dairying.

It takes the sample from the top to the bottom of the milk in the weigh can, thus giving a fair sample of the whole body of milk. When it reaches the bottom the movable cap closes, retaining the sample, which can then be discharged into the sample receptacle.

Price $2 00

MILK THIEVES.

This is a very convenient sampler and gives excellent satisfaction.

Price..... .... $0 60

TEST BOTTLE BRUSH.

Made especially for cleaning necks of Babcock test bottles.

Price, each.....$0 10 Per dozen.....$0 50

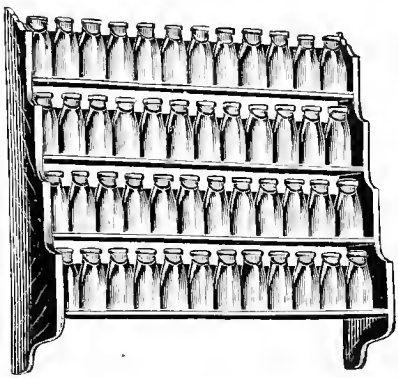
HYDROMETER.

Price, each, $0 75

For testing strength of acid.

Swedish Acid Tester.....each, 35 cents.

MILK TEST SUPPLIES.



Composite Test Sample Rack.

This rack is very convenient for holding the lightning cover sample jars. The rack can be moved from weigh room to testing room without removing jars.

PRICE.

For 24 ½-pint jars	.....	each,	$1 50
" 24 1-pint "	.....	"	1 75
" 24 1-quart "	.....	"	2 00
" 48 ½-pint "	.....	"	2 00
" 48 1-pint "	.....	"	2 25
" 48 1-quart "	.....	"	2 50

Sample Bottles for Composite Test.

CHEAPEST AND BEST SAMPLE JAR IN USE.

It is easily and quickly opened and being made very heavy from the best flint glass, and will stand much hard usage.

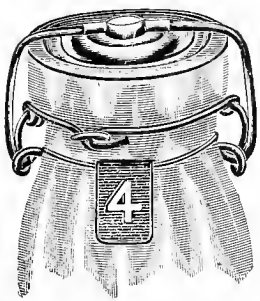
PRICE.

½-pint.....	per doz.,	$0 95	½-pint.....	per gross,	$8 25
1-pint.....	"	1 00	1-pint	"	9 25
1-quart.....	"	1 10	1-quart.....	"	10 25

Sample Bottle Brush.

FOR CLEANING COMPOSITE TEST JARS.

Each.....$0 25 Per doz.....$2 50



Brass Tags.

FOR NUMBERING COMPOSITE TEST JARS.

They are fastened about the neck of the bottle with annealed wire in such a way that they lay flat against the jar. Price.....each, $0 02

TAGS FOR BABCOCK BOTTLES.

These are made from brass to bend around neck of bottle and numbered as desired.

Price ....per doz., $0 12

PRESERVATIVES FOR MILK SAMPLES

IDEAL CORROSIVE SUBLIMATE TABLETS

The only perfect Composite Test Preservative on the market. Being made up in tablet form, they are very handy to use. They are guaranteed to properly preserve the samples for the time stated. All things considered, the "Ideal" Corrosive Sublimate Tablets are the most satisfactory Composite Test Preservative on the market. "Once used always used."

SIZES AND PRICES

	1 M lots, per M	3 M lots, per M	5 M lots, per M
Small size,—to preserve ½ pint samples 4 weeks or 1 pint samples 2 weeks	.....	.....	.....
Large size,—to preserve 1 pint samples 4 weeks or 1 quart samples 2 weeks	.....	.....	.....

Send for free samples. We recommend the large size for general use.

Composite Test Preservative, liquid.....per pkg., ...
Bichromate of Potash, powdered.....per lb., ...
" " " in 10 lbs. boxes..... " .....
Farrington's Potassium Bichromate tablets.....per M .....

LEWIS LYE

Used to cut soured samples of milk and make it fit for testing. Some use it entirely instead of any kind of a preservative.

Price, per single pkg.,.....per case of 4 doz. pkgs.....

For Prices on Preservative see our Monthly Price Current

CREAMERY AND CHEESE FACTORY STATIONERY

DAIRY AUTHORITIES

Harris, B. & C., Hand Book.....cloth, $1.25
Gurler's, "American Dairying"..... " 1.00
Decker's "Cheddar Cheese Making"..... " 1.00
Poultry Book.....paper, .50
"A B C in Cheese Making" (Cheddar and Gouda).....paper, .50
"A B C in Butter Making"..... " .50
Shoenman's "Milk Testing".....cloth, .75
Shoenman's "Butter Fat and Dividend Calculator"..... " 2.00
Milk Testing and its Products, (Farrington & Woll)..... " 1.00
Willard's Dairy Husbandry..... " 3.00
Dairying for Profit.....paper, .25
Dairy Calendar.....cloth, 1.00
The Bidwell System of Dairying.....paper, .50
Monrad's Pasteurization and Milk Preservation..... " .50
Cheese Making in Switzerland (Swiss, Brick and Limberger).....each, .50
Principles of Pasteurization..... " .50
Feeds and Feeding..... " 2.00
Dairy Bacteriology..... " 1.00
Roper's "Engineers Hand-Book".....3.50
Roper's "Care and Management of Steam Boilers".....2.00

CREAMERY AND CHEESE FACTORY STATIONERY

THE CREAMERY COMPUTATOR.

Something entirely new. Best computator ever offered. No calculations necessary. Shows at a glance value of milk at given test when butter sells at from 10 to 30 cents per pound.

Price **$2.50**

NEWTON COMPUTATOR.

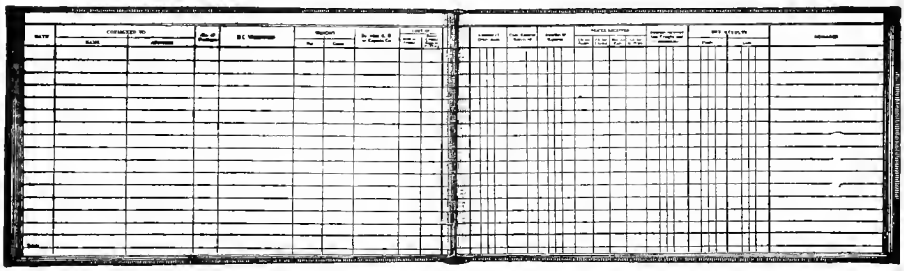
This book contains tables for the determination of the price of milk on the relative value plan and the computation of the value of any amount of milk, from 10 cents to $1.60 per 100. It also contains full and explicit instructions for operating the composit test.

A LABOR SAVER.

Price **$4.50**

NOTE—We will send either one of these computators to responsible parties for inspection, to be returned if not satisfactory, with the understanding that you pay postage both ways in case the book is returned to us. That's a fair proposition; why not accept it?

AMERICAN SHIPPING BOOK.



A Shipping Book and Ready Record of current transactions for the use of creamery men and shippers of butter, eggs, cheese and dressed poultry.

Price..... ...**each, $1.25**

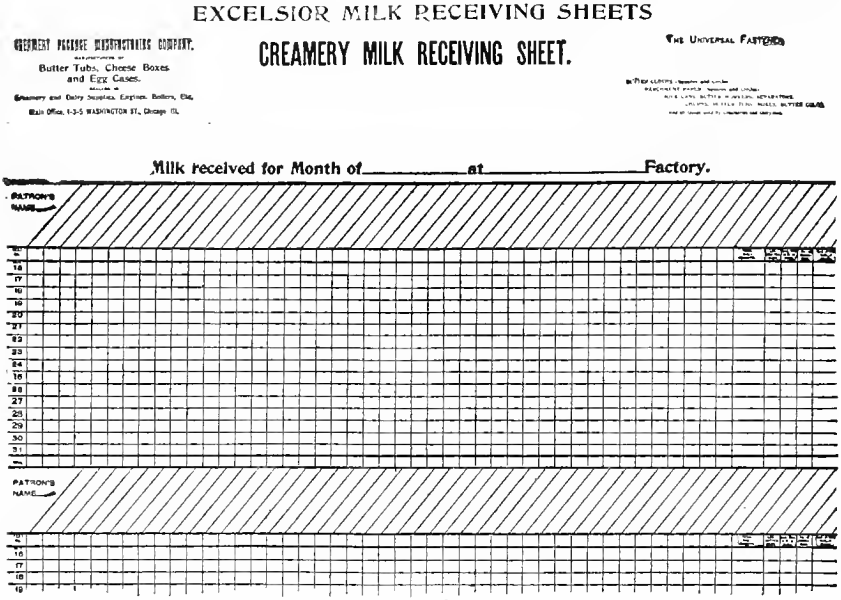
BLANK BOOKS.

Books used in the Vye system of creamery accounting.

Creamery Accounting. A book of instructions showing how to keep creamery accounts	$1.00
Cash Book.....	1.00
Shipping Book.....	1.00
Pay Roll Book.....	1.00
Test Blank Book.....	.70
The entire 5 books, comprising the Vye system.....	4.50

CREAMERY AND CHEESE FACTORY STATIONERY

EXCELSIOR MILK RECEIVING SHEETS



Monthly Sheet has one row of names, Semi-Monthly two rows. They are printed on good quality manila paper.

PRICES

63-Patron.....per doz., 70c 126-Patron, 1st half .....per doz., 70c
126-Patron, 2nd half.....per doz., 70c

COMMON

Account of _____ Creamery

For week ending _____ 189_

Name	Su	Mo	Tue	Wed	Thu	Fri	Sa	Su	Total	Name	Fri	Mo	Tue	Wed	Thu	Fri	Sa	Su	Total

96-Patron Common Bi-monthly sheets, arranged for two sets of names. The Common sheets are printed on heavy white paper, with black matter and red and blue lines. Size of sheet, 19½ in. long by 14½ in. wide. Price, per dozen.....25c

ELGIN MILK BOOKS

These books are somewhat similar to our "Common" milk sheets but in book form. They are made in two styles. The old style has the space for the names at the top and the new style at the bottom, near the summary. The latter style is more convenient than the old style.

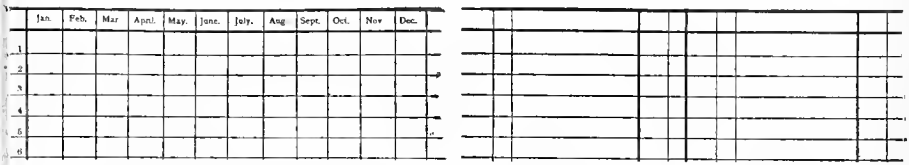
PRICES

New style, each, 75c; per doz.....$8 00 Old style, each, 75c; per doz.....$8 00

CREAMERY AND CHEESE FACTORY STATIONERY

EXCELSIOR PATRON MILK LEDGERS

151



This book is indexed and intended as a Ledger in which all individual accounts are kept and should be used in connection with the Check Register. It is without doubt the most practical book of the kind published. It is used largely in the creameries in the Elgin district, and is in great favor there.

Is also the best ledger and account book for cheese factories.

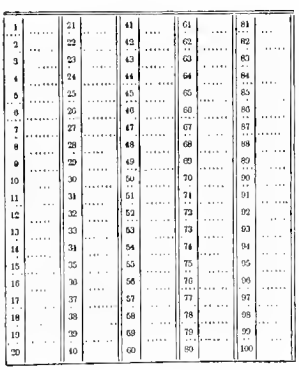
PRICES

50 patron	each,	$1 25	200 patron	each,	$2 25
100 "	"	1 75	250 "	"	2 50
150 "				"	2 00

ROE'S CHEESE FACTORY BOOKS

Also well adapted for Separator Creameries

20 patron	each,	$0 40	60 patron	each,	$0 70
30 "	"	50	80 "	"	80
40 "	"	60	100 "	"	90



TEST BLANKS

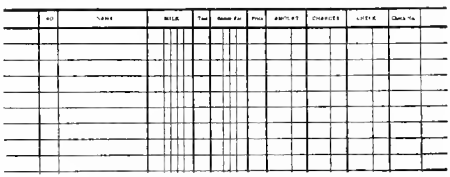
For keeping tally of tests as made

Per M.....$1 50

REPORT BLANKS

For drawing off reports of tests

Per dozen.....$0 25



CHECK REGISTER

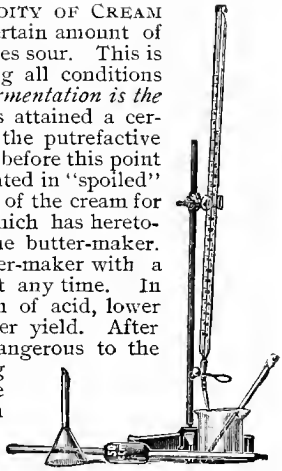
Consists of the Report Blanks bound in book form and contains 144 pages. This book is intended for keeping the monthly records of the transaction of the creamery with its patrons. A glance at the above cut will show the arrangement. It is a complete record and is appreciated by all who use it.

Price.....$2 50

READY RECKONERS

For Babcock Testers.....each, $0 40

MANNS' ACID TEST



PROF. MANNS' ACID TEST, FOR TESTING THE ACIDITY OF CREAM AND MILK.—During the process of ripening cream a certain amount of acid is developed, or, in other words, the cream becomes sour. This is due to the presence of the lactic ferment, which, finding all conditions favorable to its growth, develops rapidly. *The lactic fermentation is the one desired in the ripening process.* After the cream has attained a certain degree of acidity the lactic fermentation ceases and the putrefactive fermentation begins. If the cream should not be churned before this point is reached, the effects of the second fermentation is illustrated in "spoiled" cream. To decide, therefore, upon the proper condition of the cream for churning is a very important and very delicate point, which has heretofore been left to the senses of taste, smell and sight of the butter-maker. The object of introducing this test is to furnish the butter-maker with a means of determining the *exact* acidity of his cream at any time. In churning cream that has not attained its proper strength of acid, lower the temperature, thus saving a serious loss in the butter yield. After cream has attained an acidity indicated by 42 c. c. it is dangerous to the flavor of the product to allow the cream to stand long before churning. In cheese-making the process can be successfully used to ascertain when milk is ripe enough to add rennet.

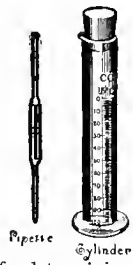
Price complete.....$5 00

EXTRAS

Burette, with pinch cock, each....	$2 00	50 c. c. pipette, each	$ 50
" stand, each.....	1 00	Beaker glass, "	20
" clamp "	50	Stirring rod, "	10
Neutralizer, per gal.....	1 00	Funnel, "	20
Indicator, 2 oz. bottle, by mail.....			40

FARRINGTON'S ALKALINE TABLETS

For Testing the Acidity of Milk or Cream



Apparatus for determining the exact acidity of milk and cream, used especially in cream ripening.

These tablets have been used successfully in the daily work of many men who handle milk and cream. They have proved to be a means by which the dairy-man is constantly learning more about his business. He is therefore more prosperous, as they aid him to get top instead of fair or medium prices for his goods.

As a simple and practical guide for showing the exact sweetness or sourness of milk or cream, they have demonstrated that an acidity tester is as valuable as any other tester for the butter-maker, cheese-maker, milk-dealer and dairy-man.

THE USES OF THE TABLETS

Among the many uses of the tablets are the following:

1. **Selecting sweet milk** for the creamery, cheese factory, milk pasteurizer or milk dealer.
2. **Testing the acidity of cream** for churning at home or at the factory.
3. **Tracing the rate of ripening** of cream, to show what treatment it is necessary to give the cream in order to get the proper acid condition for churning AT THE PROPER TIME.
4. **To show whether it is safe** to mix two lots of cream.
5. **To test the acidity of whey**.

PRICES

Small outfit complete, with 100 tablets, 20 c. c. vials and 17.6 c. c. pipette.....			$ 85
Large outfit complete, with 1,000 tablets, 100 c. c. cylinder and 17.6 c. c. pipette..			2 75
100 tablets.....	$ 50	20 c. c. vial, each	10
1,000 "	2 00	100 c. c. cylinder, each.....	95

17.6 c. c. pipette, each..... 25c.

TRIERS

BUTTER AND CHEESE

CHEESE TRIERS

Solid cast steel, 6 x ⅝ inch, flat handle	each,	$0 50
5 x ¾ inch, extra finished silver steel	"	95
6 x ¾ " " " " "	"	1 00
"T" handle, " " " "	"	2 00
Same, with leather case	"	2 50
Extra, if nickel-plated	"	15

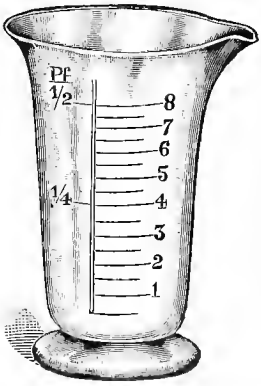
BUTTER TRIERS

No. 1. 18-inch, forged steel	each,	$1 75
No. 1. 21 " " "	"	2 00
Extra, if nickel-plated	"	35

No. 2. 18-inch, polished steel, nickeled	each,	$1 00
No. 2. 21 " " " "	"	1 25
No. 2. 24 " " " "	"	1 60

GRADUATES

Our Graduates are tested and are thoroughly accurate.

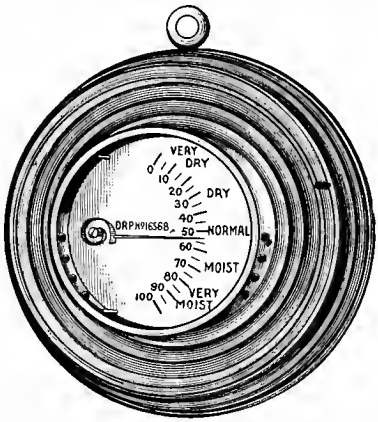


PRICE

1 dr.	each,	$0 20
2 oz.	"	25
4 oz.	"	30
8 oz.	"	45
12 oz.	"	60
16 oz.	"	75

THE HYGROMETER.

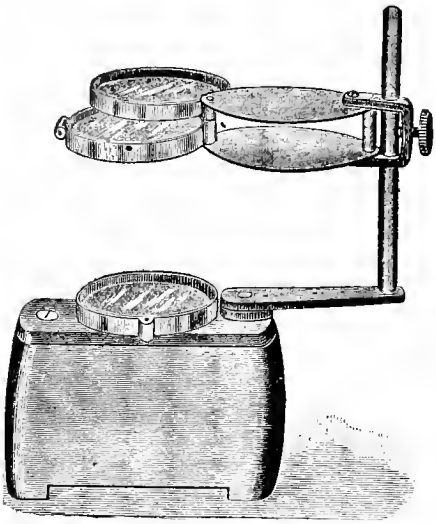
For Cheese Curing Rooms and Cold Storage Houses.



The importance of maintaining a proper degree of humidity of the atmosphere of cheese curing rooms and cold storage houses is beginning to be well understood by all intelligent cheese makers. A proper and even temperature should be held as near as possible and THE ATMOSPHERE SHOULD CONTAIN A PROPER AMOUNT OF MOISTURE. These being the essential points, we wish to call attention to the application of an instrument called the Hygrometer, which can be used in connection with any good thermometer to assist in effecting the desired result. The Hygrometer hung in a curing room will indicate the moisture in the air; if it stands at 50° and a thermometer beside it shows 72°, then the air is in proper condition for curing full milk cheese. For skims a lower temperature and a greater degree of moisture. Adapt the application of the instrument to meet circumstances, and when necessary, sprinkle floors, ventilate or by other means increase or diminish moisture. As a rule the air of curing rooms is too dry, cheese shrink too much in weight and crack; the use of this simple instrument will prevent this and save loss. The cured condition of cheese will also be greatly improved. In COLD STORAGE Rooms it is very desirable to know the degree of moisture. For this purpose the Hygrometer will be found invaluable.

Price of Hygrometer, polished wood frame, about 5½ inches in diameter.....$2 50

Sent by mail on receipt of $2.75.



(PATENT PENDING.)

SPENCE'S MILK-SCOPE.

A New, Quick Test for Tainted Milk at Any Temperature.

This instrument was invented by W. G. Spence, epxert of the N Y. State Dairy Commission, and has been successfully used by him during the past year. Anyone can use it.

Each patron's milk may be examined in a few seconds, while being delivered. If taint is discovered, the cheese maker knows how the milk should be handled, and the patron is directed to investigate the cause of it.

This is the only instrument in existence for detecting taint in milk at ordinary temperature as delivered at the factory.

Price complete, with directions for using.....$4 50

GLASSWARE

LACTOMETERS

COMMON

Our common lactometers are imported and are guaranteed to be correct. Try them.

Each.....$0 60

QUEVENNE'S

Lactometer and Thermometer combined

An accurately graduated instrument, which gives the specific gravity and temperature of milk at the same time.

Price.....$2 00

Shipped from factory only at purchaser's risk.

DIRECTIONS FOR USING QUEVENNE'S LACTOMETER

Always remember that the specific gravity of water is 1,000.

Upon the yellow-shaded paper, you will note that specific gravity of pure milk ranges from 1,033 to 1,039 as shown by the brackets.

If there is water added the amount will be shown by the brackets to represent either 1-10, 2-10, 3-10, 4-10 or 5-10 water added to the pure milk.

In testing skimmed milk you must remember that specific gravity is between 1,036 and 1,033, and in the same way as mentioned regarding pure milk, if water is added the bracket will show 1-10, 2-10, 3-10, 4-10 or 5-10 water added to the skimmed milk.

Always remember that the thermometer of the Lactometer should register 60 degrees before testing the milk; otherwise the test will be imperfect

TEST TUBES

LIGHT 3-4X6

Per dozen.....$0 25 Per 100.....$2 50

HEAVY 1X5

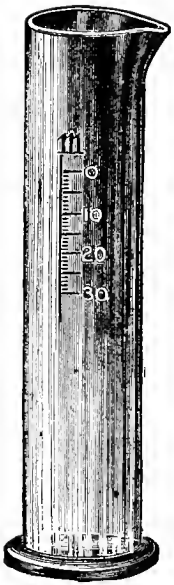
Plain, per dozen.....$0 50 Plain, per 100.....$4 00

Graduated, per dozen..... 3 00

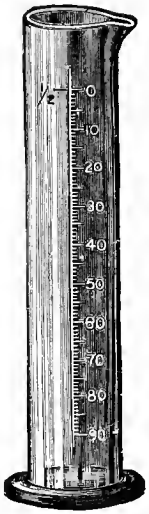
Glassware by mail is at purchaser's risk

TESTING INSTRUMENTS.

Consisting of two 2 x 12 jars, one 1½ x 10 jar, and lactometer.



Test Jar.
Grad. 0-30.
2 x 12.
Each... ...$0 50



Test Jar.
Grad. 0-100.
1½ x 10
Each $0 50

Lactometer.
Each.....$0 50

Test Jar.
Grad. 0-30.
2 x 12.
Each.....$0 50

The samples of milk to be tested by the lactometer must be brought to the exact temperature at which the lactometer is graduated, as any variation will cause a difference in their specific gravity. The lactometers which are graduated for milk at 60 Fahrenheit are the most convenient for general use. Whenever milk shows by the lactometer a less specific gravity than pure milk, one of two things may be inferred:

First—That the suspeeted milk contains a great amount of cream. This can be easily determined by comparing it with an equal quantity of pure milk, both being set in two equal cream gauges a sufficient time for the cream to rise. It will then be seen at once if the suspected milk contains more cream than the average pure milk.

Second—If it should be found to contain less fat, the inference will be that the milk has been watered. To ascertain how much water has been added, take a sample of milk known to be pure and composed of mixture obtained from several cows, and put it in a per cent jar, filling the jar up to the gauge mark 0 or zero; then fill another per cent jar to the same point with suspected milk, and the small jar to the same point with water. Place all three jars side by side, so that they will be of the same temperature and subjected to the same atmospheric influences, until the cream has time to rise. Note the percentage of cream on each sample of milk before removing or disturbing it. After removing the cream from both samples of milk, insert the lactometer in the suspected milk and note the point to which it sinks; then place the lactometer in the pure milk and pour in water from the small jar until the lactometer sinks to the same point at which it stood in the suspected milk. One-half the number of degrees of water thus taken from the small jar, as shown by the graduations on it, will indicate the per cent of water that has been added to the suspected milk.

In all tests of milk, care should be taken to render them reliable, especially when affecting the reputation of the party supplying it.

Price, complete.....$2 00

THERMOMETERS, ETC.

Floating.

COMMON FLOATING

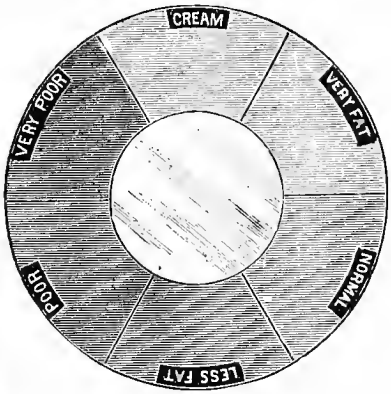
8-inch	each,	$ 25
8 "	per doz.,	1 75
8 " by mail	each	30

NICKEL-PLATED FLANGE

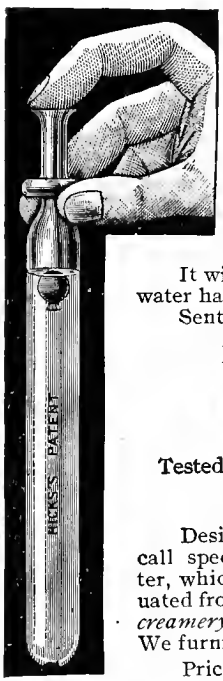
8-inch	each,	$ 25
8 "	per doz.,	1 75
8 " by mail	each,	30
10 "	"	30
10 "	per doz.,	2 00
10 " by mail	each,	40
8 " "Ideal" Oxidized	"	50

Flange.

"PIOSCOPE" OR HEEREN'S TESTER



Each.....$0 75



Little Detective

THE "LITTLE DETECTIVE"

No more watered milk. The simplest and most reliable instrument yet invented for detecting watered milk.

It will show in less than two minutes whether or not water has been added to pure milk.

Sent to any address, postpaid, on receipt of $1 00

NEW FLOATING THERMOMETER

Tested and guaranteed correct; each, 50c.; per doz., $5 50

TEST THERMOMETER

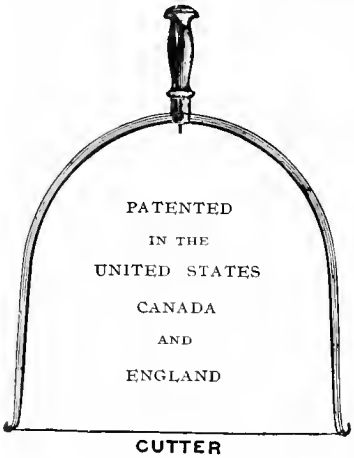
Designed for Testing Small Thermometers. We wish to call special attention to a new 12-inch floating thermometer, which we are having made specially for us. It is graduated from 32 to 212 Fahr., and is absolutely correct. *Every creamery and cheese factory should be provided with one.* We furnish them in one size only. *Thoroughly tested.*

Price, with case.....$1 50

Test Thermometer

Above goods, if sent by mail, at purchaser's risk.

THE "BOSTON" COLD STORAGE BUTTER AND CHEESE CUTTER.



CUTTER

A new and valuable implement for wiring butter and cheese.

Does its work perfectly.

Does not break off small pieces.

The only perfect tool for wiring butter ever offered to the trade.

Why dig butter out of a tub when you can cut it up into shapely bricks of the size wanted?

It saves time, patience and butter, and you can serve your customers much more satisfactorily.

This cutter is used and highly recommended by a great many butter dealers and grocery men. The bow is made of the best spring steel, tinned or nickeled, with piano wire cutters, maple or rosewood handles, and will last for years.

SPECIFICATIONS AND PRICES.

SMALL SIZE.

Bow, 12 in. high; wire, 11½ in. long. For cutting any size small cheese and small packages of butter.

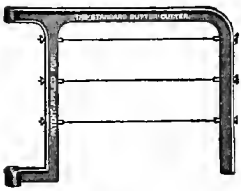
Complete, with tinned bow, maple handle and 1 doz. extra wires, each.....$1 25
Complete, with nickeled bow, rosewood handle, and 1 doz. extra wires, each 2 00

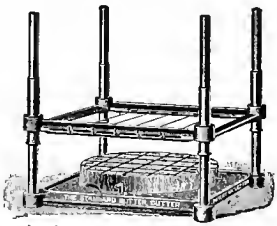
LARGE SIZE.

Bow, 16 in. high; wire 18 in. long. For cutting large cheese and large packages of butter, both in tubs and barrels.

Complete, with tinned bow, maple handle and 1 doz. extra wires, each.....$1 50
Complete, with nickeled bow, rosewood handle, and 1 doz. extra wires, each 2 50

THE STANDARD BUTTER CUTTER.





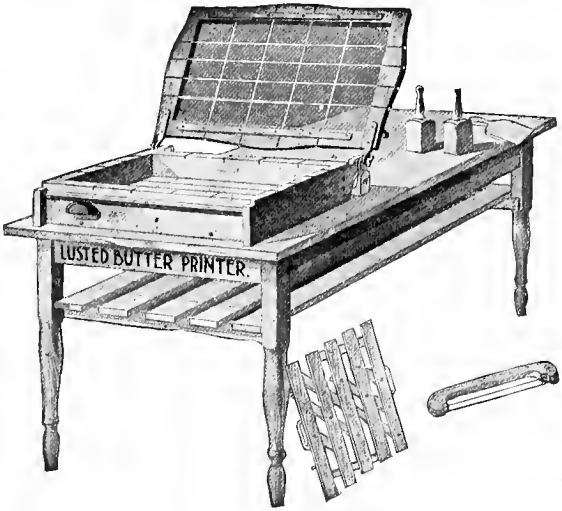
The machine was devised to meet the growing demand for a simple and practical device that would adapt itself to the requirements of a small grocer as well as the largest creamery, being low in price, yet built substantial enough to render it practically indestructible. It has no complicated parts, cranks, levers, or gear of any kind, making it impossible to get out of order. It requires no experience to operate, and its capacity and speed of operation is such that it will print a five times greater quantity of butter in a given time, than machines costing five times as much. The machine is built of steel throughout, the heavier parts being enamelled, and the balance nickel plated. Gives easy access to all parts, making it easy to be cleaned. The machine can be adjusted to cut prints of any desired size and weight, and when once adjusted will print thousands of tubs without further attention.

Unless otherwise ordered all machines are sent out "Standard Rigged," i. e. provided with an automatic gauge which will cut either one-half, one or two pound prints as desired, in the standard sizes as follows: One-half pound, 3⅜ in. x $2\frac{1}{36}$ in., square; one pound, $4\frac{5}{16}$ in. x $2\frac{9}{16}$ in., square; two pound, 5⅛ x $3\frac{5}{16}$ in., square.

Price.....$30 00

LUSTED BUTTER PRINTER

A Printer that Prints each Brick Square and True



This cut represents an entirely new and very complete machine for making Butter Prints, which is much superior in its workings to anything before offered both in completeness and rapidity of work. It is provided with a convenient table, with shelf underneath for holding tools, is easily adjusted and handled. It is made for two-pound, one-pound and half-pound prints as desired; will put out 25 pounds of half-pound or one-pound prints, or 30 pounds of two-pound prints, according to construction, at one operation of the machine, which requires but a very few minutes, and a great feature of its work is a result never approached by any other machine ever invented for this purpose. It does not shrink the butter any more than the process of packing in tubs.

It is one the most rapid and perfect Butter Printers ever placed on the market.

It is one of the few Butter Printers ever offered that will print so large a quantity at one impression.

It is one of the few Butter Printers ever invented that will leave the prints on a tray so that they can be conveniently removed to the cooler before wrapping, when necessary, using the tray as a carrier.

The tray as seen in the cut leaning against the table leg, is an adjustable rack which by a slight movement can be so opened as to separate the prints, thus preventing the danger of mussing them in handling. Four of these trays go with every machine. By the side of this tray, on the floor in the cut, is seen the trimmer with which the top of the mass of butter is leveled after being packed in the box ready for cutting into prints. One of these trimmers goes with each machine. On the table back of the print box and cutter can be seen the two packers and ladle which go with every machine sold. Directions for operating accompany each printer.

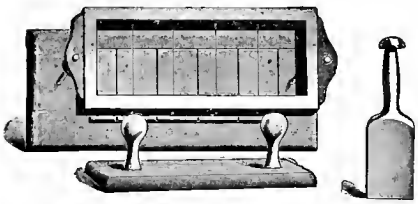
SIZES AND PRICES OF BUTTER PRINTER

No. 1 Printer, for 15 Two-pound Bricks 6x3⅜x3 inches, at one impression.....$35 00
No. 2 Printer, for 25 One-pound Bricks 2½x2½x4⅝ inches, at one impression.. 35 00
No. 3 Printer, for 50 Half-pound Bricks 2½x2½x2$\frac{5}{16}$ inches, at one impression.. 38 00
No. 4 Printer, for 50 Half-pound Bricks 1¾x1¾x3½ inches, at one impression.. 38 00
No. 5 Printer, for 16 One-pound Bricks 2½x2½x4⅝ inches, at one impression... 30 00
No. 6 Printer, for 9 One-pound Bricks 2½x2½x4⅝ inches, at one impression... 28 00

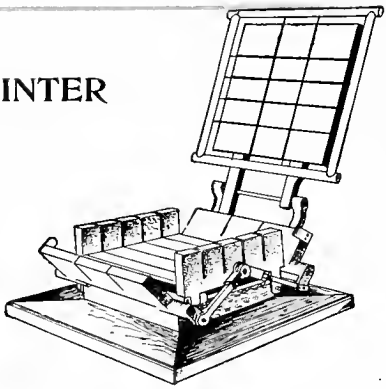
Other sizes made to order when desired.

Extra Butter Trays, 50 cents each. Extra Butter Packers, 35 cents each. Extra Butter Ladles, 25 cents each. Extra Butter Trimmers, 25 cents each. Plain Followers and Frames go with each machine. Carved Following Boards furnished when ordered, at reasonable cost.

THE AMERICAN BUTTER PRINTER



DAIRY AMERICAN



FACTORY AMERICAN.

This is a new Printer, very unique in design. It is easy to manipulate. Prints rapidly and leaves the butter in good shape, either to wrap or put in cooling room.

This machine is just what the name implies, a printing and weighing machine, making each print of accurate weight and of a perfectly true and uniform style.

Each machine is supplied with four following boards or trays which are used in removing the butter from the machine, and, if desired, butter can be left on these and placed on the refrigerator to thoroughly harden before being wrapped for shipment.

PRINT BOARDS

We are prepared to make carved print boards to go with the American Printer, of either names, initials or monograms, for which we make a nominal charge. The new feature in this respect is that the letters are raised on the wood instead of being cut into the wood, and thus pressing the letters into the butter instead of raising on same. Anyone accustomed to print butter will at once see the advantage of this, as the design will not become obliterated in packing and shipment. Each machine, before being sent out, is tested and adjusted in every particular, so that customers ordering them need have no fear whatever of their not working properly.

SIZES AND PRICES

5 lb. Dairy Size, American Printer ..... $ 5 00
8 lb. Dairy Size, American Printer 7 00
Size of prints, 2½x2¼x4⅝.
10 ½-lb. Dairy Size, American Printer 6 00
16 ½-lb. Dairy Size, American Printer 9 00
Size of prints, 2½x2½x2 5/16.
5 2-bl. Dairy American Printer 7 00
8 2-lb. Dairy American Printer 9 00
Special sizes made to order.
10-lb. American Printer, creamery size 20 00
15-lb. " " " " 25 00
20-lb. " " " " 27 50
25-lb. " " " " 30 00
Size of print, 2½x2½x4⅝.
20 ½-lb. American Printer, creamery size 25 00
30 ½-lb. " " " " 27 00
40 ½-lb. " " " " 30 00
50 ½-lb. " " " " 32 50
Size of print, 2½x2½x2 5/16.
25-lb. American Printer, special size 30 00
Size of print, 2⅜x3¼x3¾.
50 ½-lb. American Printer, special size 32 50
Size of print, 2⅜x1⅝x3¾.
15 2-lb. American Printer, special size 32 50
Size of print, 6x3⅜x3.

Each Factory Printer sent complete with four Trays, one Butter Packer, one Butter Ladle and one Trimmer.

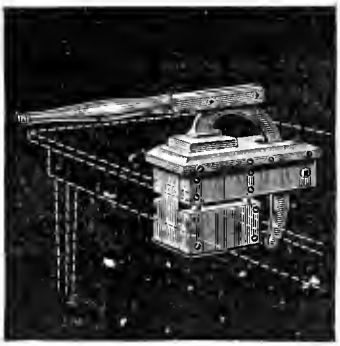
Extra Trays, each $0 50
Extra Cutting Wires, each 02

Large and Substantial Printing Tables, each $2 50

BUTTER PRINTERS

"IDEAL LEVER"

THE ONLY SUCCESSFUL PRINTER



FOR COLD STORAGE BUTTER

Above we illustrate one of our newest printers. It is adjustable, so that it will print either pounds or half pounds. It is self-gauging, making the prints neat and also uniform in weight.

This printer is intended for use in creameries, but more especially for printing storage or tub butter. It is very rapid and does excellent work.

To Operate, you press the box full of butter, which is level with the top of the table, working it in solid, using the lever; you then stroke it off level with a paddle, then raise the lever and throw it all the way back, which raises the butter out of the box nicely printed.

There are screws in the bottom of the print block, and also in the bottom of the follower, for adjusting the weight of the butter, which it does more exactly than if weighed. Prints are the same size as those of the I X L Printer.

SIZES AND PRICES

1 lb. or ½ lb. printer	$10 00	2 lb. printer	$13 00
1 lb. or ½ lb. printer, complete with table	15 00	2 lb. printer, complete with table	18 00
		10 lb. " " " "	25 00

EXTRAS

Handle	$0 75	Initial Blocks	$1 00
Plunger blocks	10	½ lb. plates for blocks	20
Plunger Arm	1 00	1 lb. " " "	25
Sheaf Blocks			1 00

I X L SELF-GAUGING

SIZES AND PRICES

With one box and print (either 1 lb. or ½ lb)	$10 00
With both 1 lb. and ½ lb. boxes and prints	13 50
With both 1 lb. and 2 lb. boxes and prints	13 50
For 2 lb. printer	11 00

$1.00 extra for initials or monogram.

Regular sizes: ½ lb. printer, 3⅝ in. long by 2¼ in. wide; 1 lb. printer, 4¾ in. long by 2½ in wide; 2 lb. printer, 6 in. long by 3¼ in. wide. Special sizes made to order.

PRINTER EXTRAS, I X L

Rods	$0 75	Set M. & F. Hinges	$0 50
Frames	3 50	Set (2) Thumb Screws	05
Spur Piece	25	1 lb. Hopper	2 50
Set Screw	05	2 lb. "	3 00
Handle, (wood only)	40	Catch	05
" complete	75	Stem	20
Plunger with plate, ½ lb	20	Base Board	25
" " " 1 lb	25	Lever Hinge, complete	75
" " " 2 lb	35	Wrench	20
Latch	10	½ lb. Attachment	3 50
Sheaf Block	1 00	1 lb. "	4 00
Initial "	1 00	2 lb. "	4 50

LAFAYETTE

Handle	$0 75	Sheaf Blocks	$1 00
Plunger Blocks	10	Initial Blocks	1 00
Plunger Arm	1 00		

Name of person or farm, 5 to 10 letters, 15 cents per letter; over 10 letters, 13 cents per letter, including border. Monograms and special designs quoted on application.

BUTTER PRINTERS

THE "EUREKA"

No. 1.

This improved Butter Mould and stamp is self-weighing or gauging. The same stamp can be adjusted to print pounds or half-pounds. The adjustment is regulated by a collar that moves up and down on the upright standard and is kept in place by a set-screw. The slide is readily moved in and out by a simple motion of the middle finger.

The process of printing is very rapid. With little practice a person can easily mould from ten to fifteen prints per minute.

Gives accurate weights when rightly adjusted. Prints pounds 4⅝ x 2½ x 2⅜ inches; also half-pounds 4⅝ x 2½ x 1 3-16 inches.

It is made of close-grained hard wood with gun metal, nickel-plated top and trimming.

PRICE

With plain (uncarved) print block (to print pounds or half-pounds) $4 50

EXTRAS

Frame	$2 25
Post	60
Cap	40
Clamp	30
Clamp Screw	05
Slide	20
Slide Screw	05

No. 2.

This Butter Mould is essentially like the Eureka No. 1 in its workings and construction, except that there is no metal band around the top. The same printer will print pounds or half-pounds of the same sizes as the No. 1, and is made also in two-pound size, twice as wide as the one-pound.

PRICES

With plain (uncarved) print block.

To print pounds, 4⅝x2½x2⅜	$3 50
Or half-pounds, 4⅝x2½x1 3-16	3 50
To print two pounds, 4⅝x5x2⅜	4 00
Or two pounds, 6x3	4 00
Or single pounds, 4⅝x5x1 3-16	4 00

EXTRAS

Frame	$1 10
Post	60
Cap	40
Clamp	20
Clamp Screw	05
Slide	40
Slide Screw, each	05

THE REID'S AUTOMATIC IRON CLAD

The sides and ends are hinged independent of each other, and open and close automatically with the raising and lowering of the lever.

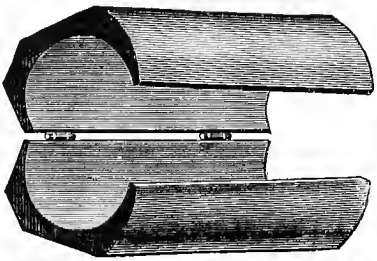
SIZES AND PRICES

For either pound or half-pound printer	$15 00
For both pound and half-pound printer combined	20 00

BUTTER MOULDS

"CALIFORNIA" MOULD

BRASS HINGES. ROLL.

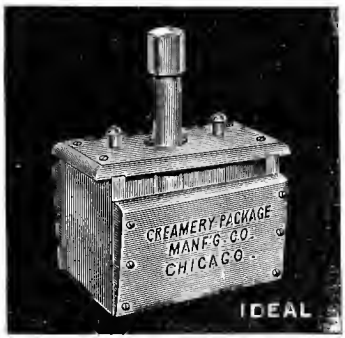


This cut represents a mould used extensively on the Pacific coast, and preferred there to all other forms. It is a very convenient shape and makes a nice-looking roll, desirable for the market, and is being adopted in other sections of the country by butter-makers and packers for shipping purposes. Made in one size only.

PRICE

Two-pound California Moulds, each.....$1 00

"IDEAL" HAND MOULD



A durable and satisfactory Mould at a moderate price.

Price .....each, 90 cts

WOODEN BUTTER KNIVES

Price .....each, 15 cts

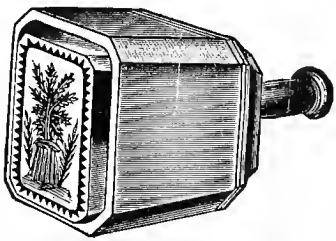
BUTTER MOULDS AND LADLES.

SQUARE MOULDS.

SIZES AND PRICES.

One Ounce Square Mould.

	Each.	Per doz.
$\frac{1}{16}$ lb.....	$0 15	1 60
$\frac{1}{4}$ lb.....	25	2 75
$\frac{1}{2}$ lb.....	30	3 00
1 lb.....	35	3 75



One Pound Square Mould

ROUND MOULDS.

SIZES AND PRICES.

Individual Mould.

	Each.	Per doz.
$\frac{1}{16}$ lb.....	$0 10	90
$\frac{1}{4}$ lb.....	15	1 75
$\frac{1}{2}$ lb.....	20	2 00
1 lb.....	25	2 50
2 lb.....	30	3 00

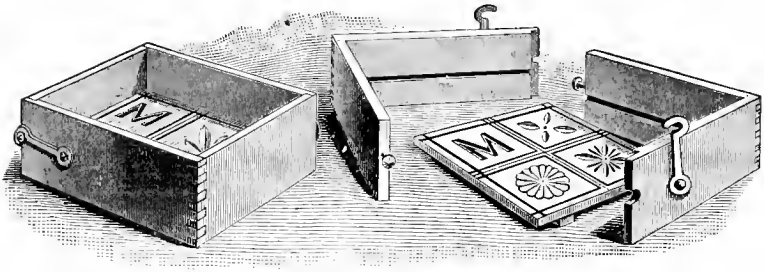
One Pound Mould.

Initial letters carved on moulds, if desired, at a small extra expense.

BUTTER MOULDS.

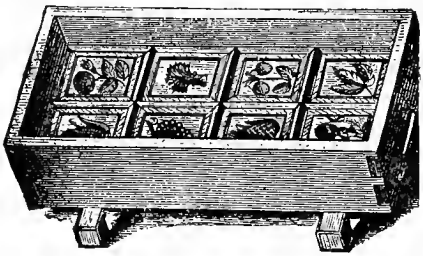
BLANCHARD.

LATEST, CHEAPEST, BEST.



Half-pound.....$1 00 One-pound.....$1 25 Two-pound.....$1 75

It has been made to supply the demand for a simple, durable, cheap and practical mould which will release the butter after the mould is filled, without pushing or sliding the butter through a rigid form, which always injures the grain.



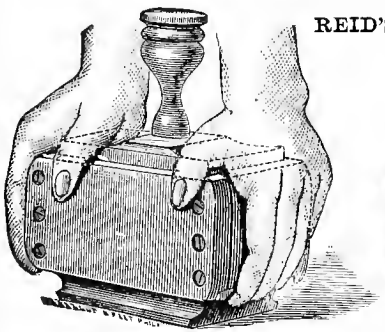
COMBINATION BUTTER PRINTS.

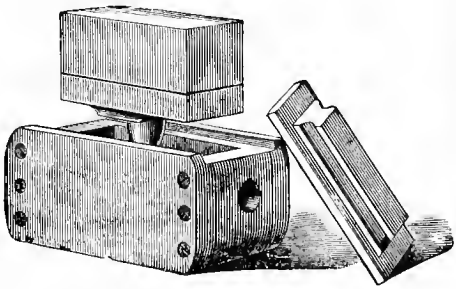
This mould, which holds 2 ℔s., is divided into 8 cakes, ¼ ℔ each, with a cutter which goes with each print. The butter is pressed into the mould onto the face of print with a paddle, which is also used as a stick to strike off surplus butter.

	No. of cakes	Capacity of each	Dimensions of	
No. 1.	each impression, 3	cake in ounces, 8	each cake, 3½ x 3⅛	$3 50
" 3.	" " 4	" " 8	" " 3 x 3	3 75
" 5.	" " 4	" " 4	" " 2½ x 2½	3 75
" 7.	" " 6	" " 4	" " 3½ x 1¾	4 25
" 9.	" " 16	" " 1	" " 1¼ x 1½	5 00
" 12.	" " 8	" " 8	" " 2¾ x 2½	4 50

Any other combination of any size cake made to order.

REID'S FAMILY BUTTER MOULD.

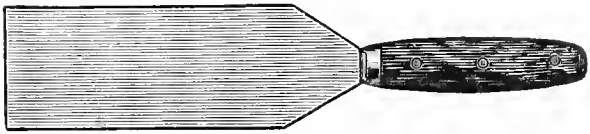




½ ℔.....$1 50 1 ℔.....$1 50
2 ℔.....2 50

The Blanchard and Combination are special moulds, made on orders and shipped from factory.

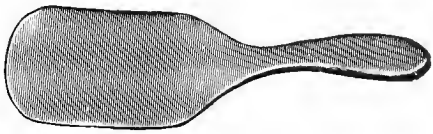
STEEL BUTTER SPADE.



Wooden handle, 8 inch steel blade, nickel plated, each.....$1 00

ALUMINUM BUTTER LADLE.

The desirability of aluminum for butter ladles and spades has been fully demonstrated. The goods are light, easy to keep clean and bright, and will not rust or corrode under any circumstances



Size, 3½ x 9 inches, list, each.....$0 50

These will answer for making butter as well as for grocers' use.

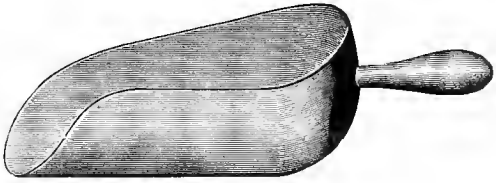
SPADE.

For Butter or Lard.

Size, 3½ x 10½ inches, list, each.....$0 75

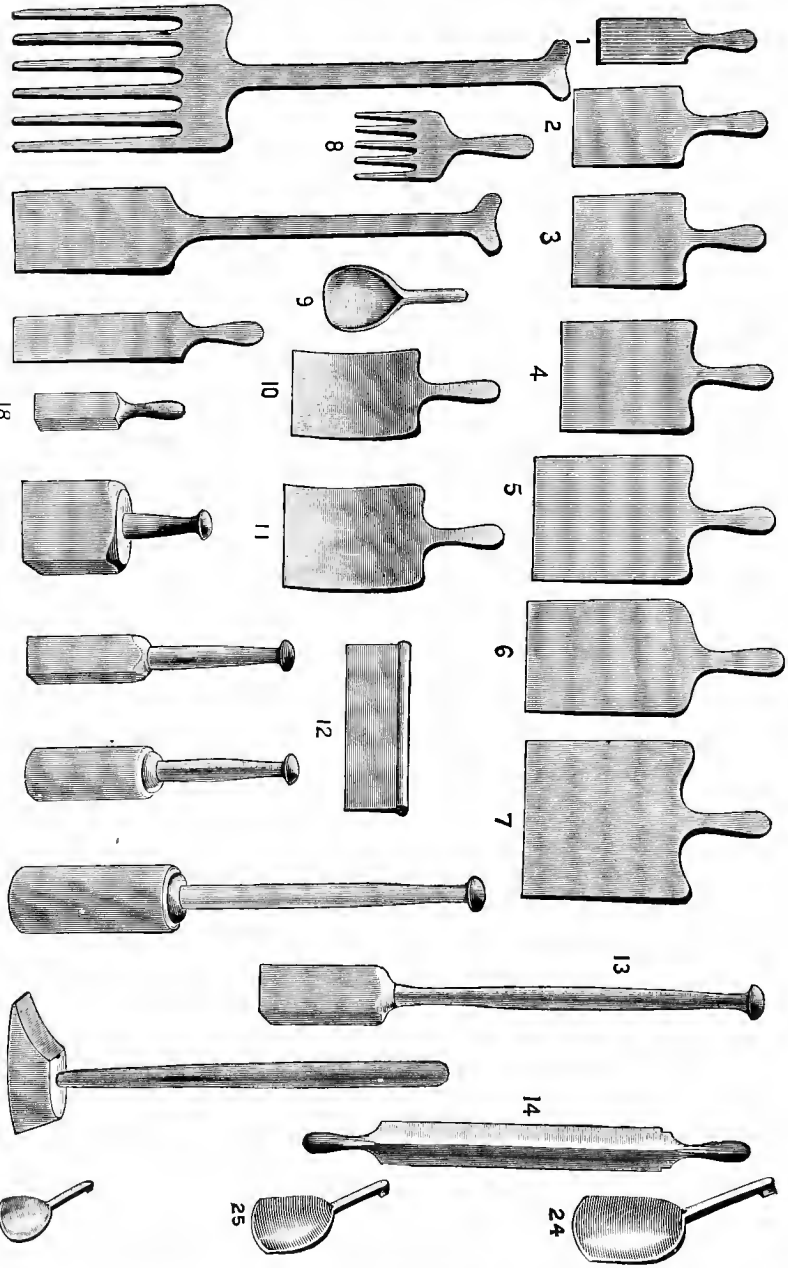
ALUMINUM SALT SCOOP.

Will Not Rust or Corrode.



Size, 4½ x 12 inches, list, each.....$1 40

BUTTER LADLES AND PACKERS.



SIZES AND PRICES OF BUTTER LADLES AND PACKERS.

All of our ladles are made from select stock carefully seasoned. Especial care is take in the manufacture of these good to secure the full strength of the wood. All of these goods are highly finished.

	STYLE.	SIZE.	EACH.	PER DOZ.
1	Corrugated Dairy Ladle	2¾x 9¾		$ 1 00
2	Dairy	5 x12	$0 20	2 25
3	Large Dairy	6 x12	25	2 50
4	Factory	7 x13	30	3 00
5	Medium Large Factory	8 x15	35	3 50
6	Large Factory	7 x16	40	4 00
7	Special Large Factory	10 x15¼	50	5 00
8	Small Butter Fork	4½x11¼	25	2 50
9	Dairy Spoon	4 x 9	20	2 00
10	Medium Spoon	5½x13	30	3 00
11	Large Spoon	6½x14	40	4 00
12	Butter Cutter for Prints	10½x 4	50	5 00
13	Large Packer, long handle	3¼x3¼x31	60	7 00
14	Striker for Tubs or Printers 3 cornered	2½x27½	50	5 00
15	Large Curd Fork	9½x36	75	9 00
16	Large Spade, long	5¼x21	60	6 00
17	Narrow Spade, short	3 x16	50	5 00
18	Square Dairy Packer	1¾x1¾x 9¼	25	3 00
19	Large Square Packer, short handle	4½x5¼x11½	60	7 00
20	Small Square Packer	2½x2½x16¼	50	5 00
21	Small Round Packers	3¼x16¾	50	5 00
22	Large Round Packer	4¼x29	75	9 00
23	Large Half Round Packer	6x8¼x26½	75	9 00
24	Small New York Ladle	5¾x 6½	20	1 50
25	Medium New York Ladles	6⅝x10½	30	3 00
26	Large New York Ladles	7 x12	50	5 00

ASH TUBS

"ELGIN" STYLE—HAND MADE

These tubs are made from strictly prime White Ash, the stock being first thoroughly air-dried and then kiln-dried just enough to extract all the sour sappy substance from the timber.

In addition to the above drying we still further cure the wood by fire heating in the process of manufacture. This thoroughly softens and sweetens the timber, and thus reduces the possibility of moulding to the minimum.

Our facilities are extensive and of the very best, which enables us to make uniform, solid and brine-tight packages. These are advantages which no other manufacturers of this style of package possess.

A large majority of the *Commission Houses* and large *Butter Manufacturers* use and recommend this package. It is without doubt the best Butter Package now on the market.

Many so-called *Hand-Made Tubs* are made from stock which has simply been air-dried. They shrink and fall down and are wholly unfit for butter, often spoiling it, and entailing a loss many times the cost of the package.

SIZES AND DIAMETERS FOR CIRCLES

Sizes	Diameter Top, Inches.	Diameter Bottom, Inches.	Sizes	Diameter Top Inches.	Diameter Bottom, Inches.
10 lbs.	8½	6	56 lbs.	14½	11½
20 "	11	8½	60 "	15	12
24 "	12	9½	70 "	16	12½
25 "	11½	8½	80 "	16½	13½
30 "	12	9½	90 "	17½	14½
40 "	13	10½			

For Prices see our Monthly Price Current

SPRUCE TUBS
"VERMONT"

The Boston Market, at least, prefers a Spruce Tub and gives preference to butter—other things being equal—packed in this style of packages. We have working arrangements with several spruce tub factories whereby we are able to furnish the **Best Spruce Tubs** the market affords at reasonable prices and in quantities of one nest or a car load, and guarantee quality.

Prices, No. 1 Spruce.

Nests, 4–10, 20, 30, 50 lb	per nest, $	....
" 3–20, 30, 50 lb	"	....
" 3–10, 20, 30 lb	"	....
" 3–25, 40, 50 lb	"	....
" 2–20, 30 lb	"	....
" 2–10, 20 lb	"	....
5 lb. single	each,	....
10 lb. "		....
20 lb. "		....
25 lb. "		....
30 lb. "		....
40 lb. "		....
50 lb. "		....
60 lb. "		....

SIZES AND DIAMETERS FOR CIRCLES

	Diameter Top. Inches.	Bottom. Inches.
Singles, 5 lbs	6	5½
" 10 "	8½	6¾
" 20 "	10½	8½
" 25 "	11	10
" 30 "	12	10
" 40 "	12½	10½
" 50 "	13½	11
" 60 "	15	12½

We can match up cars of Spruce Tubs and other packages

For Prices see our Monthly Price Current

"BRADLEY" BUTTER BOXES

Bradley Boxes

Vermont Spruce is the only wood employed in their manufacture and is, in its native state, so nearly free from all odor that butter may be kept in it without absorbing any flavor whatever. The top and bottom rims are made of tin, which does not come in contact with the butter. These elegant and substantial packages range in capacity from one-half to ten pounds. They preserve the butter either perfectly air tight or practically so, in prints of full packed packages, perfectly free from woody flavor, excess of salt and external influence of any kind. Each package may be opened and examined and closed again, and may be kept by consumer in any convenient place without fear of the butter getting any taint from food or impure air, or odors of cooking.

We keep in stock at all times the following sizes and these only:

SIZES AND PRICES

½ lb. Boxes, in crates holding 60 boxes, 30 lbs. butter, weight including crate, 13 lbs., diameter 4 inches.....per crate, $ ....

1 lb. Boxes, in crates holding 48 boxes, 48 lbs. butter, weight, including crate, 13 lbs., diameter 4 inches.....per crate, ...

2 lb. Boxes, in crates holding 24 boxes, 48 lbs. butter, weight 13½ lbs., including crate, diameter 4½ inches.....per crate, ...

3 lb. Boxes, in crates holding 16 boxes, 48 lbs. butter, weight 11½ lbs., including crate, diameter 5½ inches.....per crate, ...

5 lb. Boxes, in crates holding 12 boxes, 60 lbs. butter, weight 12¼ lbs., including crate, diameter 6½ inches.....per crate, ...

10 lb. Boxes, in crates holding 6 boxes, 60 lbs. butter, weight 12 lbs., including crate, diameter 8½ inches.....per crate, ...

For prices see price current

SIZES OF SIDE LININGS

FOR BRADLEY BOXES

				CIRCLES
3 lbs	3¾ inches	x 18 inches		5½
5 "	4¾ "	x 22 "		6½
10 "	6 "	x 25½ "		8½

For complete lining include two circles.

BAIL BOXES

These boxes are very popular among shippers and consumers. Butter packed in them finds a readier and often a better market, as they are very handy, as well as neat in appearance. They are put up in crates of six. They should be lined with parchment paper before filling.

SIZES, DIMENSIONS AND PRICES

	TOP	BOTTOM	PER DOZ.
7½ lbs	8⅝ inches	8⅝ inches	$.....
8 "	8⅝ "	8⅝ "	.....
9 "	8⅝ "	8⅝ "	.....
10 "	8⅝ "	8⅝ "	.....
16 "	10⅜ "	10⅜ "	.....

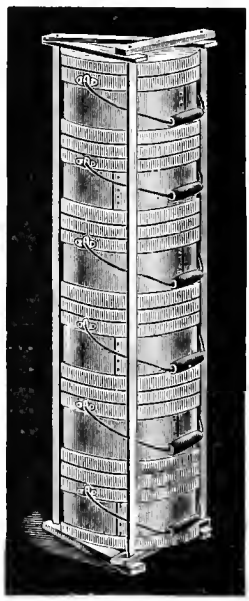
For net prices see price current.

SIZES OF SIDE LININGS

FOR BAIL BOXES

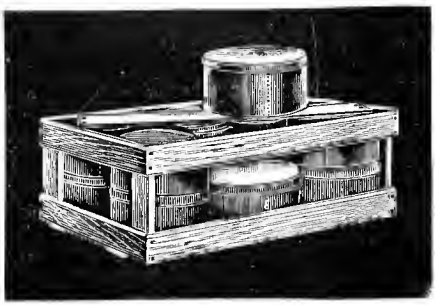
				CIRCLES
7½ lbs	5 inches	x 25 inches.		8½
8 "	5 "	x 23 "		8½
9 "	5¼ "	x 26 "		8½
10 "	6½ "	x 26 "		8½
16 "	6½ "	x 32 "		10½

For complete lining include two circles.



Bail Boxes

ROUND SPRUCE BUTTER BOX



These boxes are made from Vermont spruce, with strong tops and bottoms, and are so substantial that they can be shipped singly.

An elegant and practical butter package. Try them. Made in one size only.

PRICE

Per cr't of 12 5-lb. boxes, Diam. 7 in., $.....
Dimensions of Side Linings 4 in. x 24 in.

When ordering linings state whether or not circles are wanted.

THE GEM FIBRE BUTTER PACKAGE

The **Neatest, Cheapest** and **Best** small Butter Package ever made.

This package is the result of years of study and experiment. It is made of waterproof Jute Board, and is lined with the very best quality of porchment, making it **Clean, Tasteless** and **Odorless.** It is constructed without seams or open joints, being made one solid piece under heavy pressure, hence it is **Strong** and **Neat**. Owing to the material used it is **Light.** It has more desirable features than any package on the market. These packages are put up in cases for carrying butter to distant markets or in bulk for local trade.

Price List in Cases

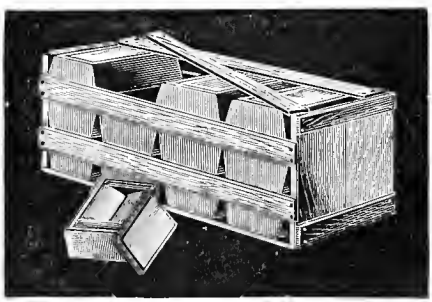
	Per Case.
1-lb. box, 48 in case	.....
2 " " 24 "	.....
3 " " 16 "	.....
4 " " 12 "	.....
5 " " 12 "	.....
6 " " 8 "	.....
10 " " 6 "	.....
15 " " 4 "	.....

Price List in Bulk

	Per 100.
1-lb. boxes, each weighing 1½ oz. at	.....
2 " " " " 2¼ "	.....
3 " " " " 3 "	.....
4 " " " " 3¼ "	.....
5 " " " " 4 "	.....
6 " " " " 4¾ "	.....
8 " " " " 7 "	.....
10 " " " " 8 "	.....
15 " " " " 10 "	.....
20 " " " " 11 "	.....

Small cases are made tight, with hand holes in end. These packages are also shipped in bulk, two or more sizes nested, 100 or more each size in light cases.

DUMAS' IMPROVED SPRUCE BUTTER BOX



This is a strong, well-made and smoothly-finished spruce box, put together with locked corners.

The sides of the package are tapered, allowing the box to be stripped from the butter easily, and the covers, being cut away at the edges, as shown in the illustration, fit perfectly.

Each box is lined with parchment paper.

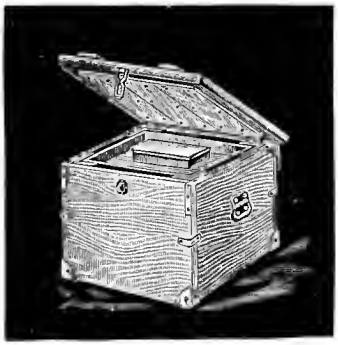
SIZES AND PRICES

3-lb., per crate of 24 boxes.....$.....
5 " " " 12 " ....

Both the Dumas and Round Spruce Boxes are in especial favor in the Boston market. Send us a sample order.

For Prices and Discounts see our Monthly Price Current

IMPROVED BUTTER SHIPPING BOXES.



These boxes are made of seasoned lumber, iron-bound at the edges and capped at the corners, as shown in the engraving. Detachable hinges are used for the lid, which cannot be strained or easily broken.

The trays for the butter are let down into the box, one upon another, and may be put in or lifted out with the butter in them. A movable ice-box is placed in the center; when this is not used, a strip, provided for the purpose, may be placed at the bottom of each tray to fill up the space.

PRICE LIST OF WOOD TRAY.

Capacity 12lbs	$3 50	Capacity 56lbs	$5 00
" 20lbs	3 75	" 80lbs	5 50
" 30lbs	4 25	" 96lbs	6 00
" 40lbs	4 75	" 120lbs	6 50

Can furnish the Tin Tray Boxes on special orders.

PRICE LIST OF TIN TRAY BUTTER BOX.

Capacity, 6lb prints	$3 75	Capacity, 2—½lb prints	$2 25
" 8lb "	4 00	" 6—½lb "	3 75
" 12lb "	4 50	" 12—½lb "	4 00
" 18lb "	5 50	" 24—½lb "	5 00
" 30lb "	6 25	" 36—½lb "	6 00
" 40lb "	7 00	" 64—½lb "	7 00
" 56lb "	7 50	" 80—½lb "	7 50
" 80lb "	8 25	" 100—½lb "	8 25

BUTTER STANDS.

Made from the very best white oak. Used largely by dealers for shipping country or store butter to be re-worked.

Heavy and very durable.

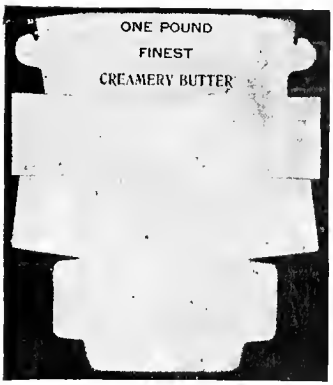
SIZES AND PRICES.

125lb, each	$1 35
150lb, "	1 45
175lb, "	1 75
200lb, "	1 85

Butter Stands shaped like 60-lb. Ash Tubs.

100-lb., each	$1 50
150-lb., "	1 60
200-lb., "	1 75

SINGLE PRINT BUTTER BOXES



KNOCKED DOWN

"Ideal" Manilla Print Butter Package

These boxes are made to hold the Regulation 1-pound print. They are made from a single sheet of manilla paper cut to form, and creased so as to fold up into a neat and very attractive package.

Size, made up, 2¾ inches x 2⅞ inches x 5⅜ inches.

PRICES

250 to 500 Lots....	Per 1,000,	$ ....
750 Lots.....	"	....
1,000 "	"	....
5,000 "	"	....
10,000 "	"	....
50,000 "	"	....

Special quotation on larger quantities.

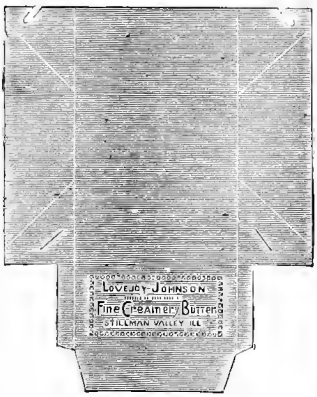
Printing cards on boxes in quantities less than 5,000, $..... per order. Over 5,000 no extra charge.

MADE UP.

THE PERFECTION PARAFFINED BUTTER WRAPPER

We have received recently a number of inquiries for an attractive paraffined butter wrapper. The wrapper which we illustrate we have designed especially for this trade. The wrapper sets up in such a way as to be water tight at the bottom. It can be set in water nearly up to top without danger of allowing the water to get into the package.

The wrapper should be set up around the print of butter. This will be found more convenient than to put the print into the set up box.

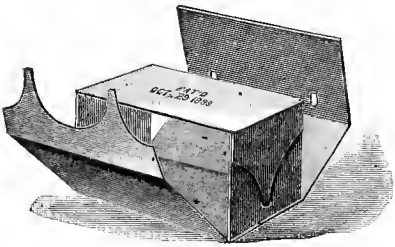


PRICES

Lots	Per 1,000
5,000	$....
10,000	....
25,000	....
50,000	....

Price includes printing on two sides in one color. No orders printed up in less than 5,000 lots.

PIKE'S VENEER WRAPPER FOR PRINT BUTTER



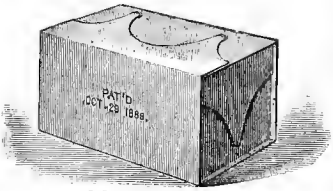
BOX OPEN.

This box is constructed of two thin veneer pieces of hard wood, and has score cuts so it will fold around the standard size print, covering it completely and thoroughly protecting it. (The standard size of print is 4⅝ x 2½ x 2⅜ inches.)

The advantages of this package are:

ITS EXCEEDING LIGHTNESS, SAVING EXPRESS CHARGES
IT SAVES FREIGHT CHARGES ON RETURN BOXES

Each print wrapped securely and separately, and the name and address of the producer may be stamped on the outside of each package.



BOX CLOSED.

PRICES

Wrappers, complete without crates..... ....per 100, $ ...

For Prices see our Monthly Price Current

"AUSTRALIAN" BUTTER BOXES

WHITE SPRUCE

THE LIGHTEST

THE BRIGHTEST

THE BEST

AUSTRALIAN PACKAGE ON THE MARKET

The extreme lightness of these boxes will effect a saving in freight alone, between our factory and the cousumer of the butter, of from five to eight cents on every package. Outside of this they are beyond all question the finest package made for storage butter that will be satisfactory for foreign shipment. They are the regulation size, 12x12x12 inside measure; the sides, tops and bottoms are each of one piece. These boxes are finely finished inside and out· are cut true to gauge and nail up perfectly. They

IMPART NO BAD FLAVOR TO BUTTER

The superiority of spruce for butter packages has long been recognized, and we are offering our customers the very best box that can possibly be made for butter.

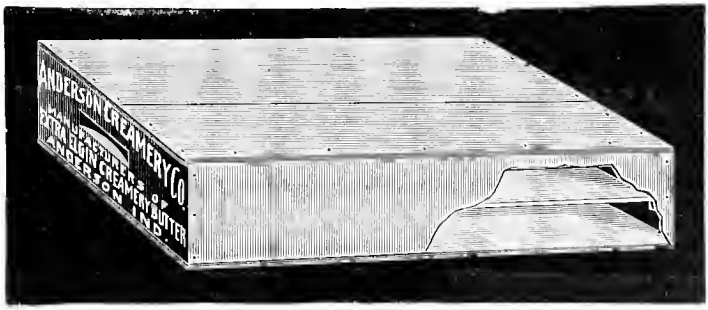
PRICES

In lots less than 100.....each, $....
" " of 100..... " ....
" " " 200 to 400..... " ....
" " " 500..... " ....
In carload lots .....special

Can also furnish White Wood and Poplar Australian Boxes at lowest market prices.

For Prices see our Monthly Price Current

BUTTER PRINT BOXES



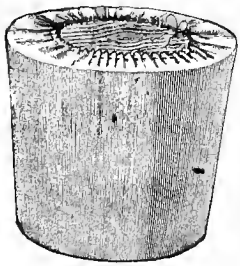
These boxes are made from poplar, planed one side and very neatly finished. The ends are made with hand hole as shown in cut. We furnish these boxes in the K. D. only. The freight charges are much less shipped this way, and it costs but a trifle to put them together. They should be lined with parchment paper before using.

Capacity	Size of Print	Number of partitions	Dimensions			Thickness of		Price.
			Length	Width	Height	Sides, tops, bottoms & partitions	Ends	
30 lbs.	1 lb.	None	13 in.	8 in.	9⅝ in.	⅜ in.	⅝ in.	Ea, $....
40 "	½ "	"	16 "	11½ "	7½ "	"	"	" ....
40 "	1 "	"	13 "	10⅝ "	9⅝ "	"	"	" ....
50 "	1 "	"	13 "	13 "	9⅝ "	"	"	" ....
54 "	1 "	"	23¼ "	14½ "	5⅛ "	"	"	" ....
20 "	1 "	"	13 "	10 "	5¼ "	"	"	" ....
54 "	1 "	One	24 "	14¾ "	6 "	"	"	" ....
72 "	2 "	None	20¼ "	12½ "	9 "	"	"	" ....

NUMBER AND SIZES OF PARCHMENT LINERS COMPLETE FOR ABOVE BOXES

30 lbs.,	no	partition,	two	sheets,	8	x 13 in.	and	one	sheet,	8	x 46 in.
80-½ lbs.	"	"	"	"	15	x 24 "	"	two	sheets,	5	x 40 "
40 lbs.	"	"	"	"	11	x 13 "	"	"	"	10	x 24 "
50 "	"	"	"	"	13	x 13 "	"	"	"	10	x 28 "
54 "	"	"	"	"	14½	x 24 "	"	"	"	5½	x 40 "
60 "	"	"	"	"	10	x 22 "	"	"	"	12	x 36 "
54 "	one	"	four	"	15	x 24 "	"	"	"	6	x 40 "
36-2 lbs.	no	"	two	"	12½	x 20 "	"	"	"	9	x 36 "

BURLAPS



If you want your packages to arrive at destination in nice shape, use burlaps on them. They should always be used where butter is to be shipped long distances or put in storage.

SIZES AND PRICES

10-lb. tub size.....each, $....
20 to 25-lb. tub size ..... " $....
30 " 40 " " ..... " $....
50 " 60 " " ..... " $....
70-lb. tub size ..... " $....
Australian Butter Box size ..... " $....

PARAFFINE

Used for coating the inside of butter boxes and small tubs.

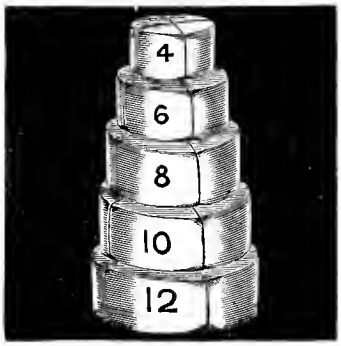
PRICES—BEST GRADE

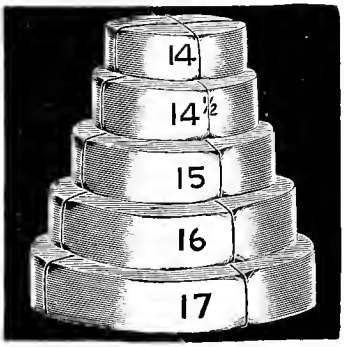
Per pound .....$....
25-lb. tubs .....per lb. ....

For Prices on above goods see Price Current

EXCELSIOR CLOTH CIRCLES AND SQUARES

THE BEST IN THE MARKET





PARCHMENT SQUARES AND TUB LINERS

FINEST QUALITY

"EXCELSIOR" CLOTH CIRCLES AND SQUARES

They are made from the heaviest of bleached cloth used for this purpose. We guarantee perfect Circles, full count and full weight. We are the largest manufacturers of these goods in the U. S., our machines having a capacity of 6,000 yds. of cloth per day. We have no hesitancy in claiming superiority for the Excelsior brand of Cloth Circles and Squares.

PARCHMENT CIRCLES AND SQUARES

Our facilities for manufacturing Parchment Circles and Squares are unexcelled. We use the very best grade of paper only, and have capacity for turning out large quantities of these goods. We are in position to fill large and small orders promptly upon receipt.

CLOTH AND PARCHMENT CIRCLES

SIZES AND PRICES PER M

In.	Paper	Cloth	In.	Paper	Cloth	In.	Paper	Cloth
4	$0 45	$0.70	8½	$1.50	$3 00	13	$3.55	$ 6 50
4½	.50	.85	9	1.70	3.35	13½	3.80	7.00
5	55	1.10	9½	1.90	3 75	14	4.10	7.50
5½	65	1.30	10	2.10	4.20	14½	4.40	7.85
6	.75	1.45	10½	2.30	4.50	15	4.70	8.00
6½	.90	1.65	11	2.55	4.75	15½	5.00	8.50
7	1 00	2.00	11½	2.75	5 25	16	5.35	9.00
7½	1.20	2.50	12	3 00	5 80	16½	5.70	9 50
8	1.35	2.75	12½	3 30	6 00	17	6.00	10 00

CLOTH AND PARCHMENT SQUARES

We cut our own squares and can fill orders promptly for odd sizes.

SIZES AND PRICES PER M

Size	Paper	Cloth	Size	Paper	Cloth	Size	Paper	Cloth
6x6	$0.50	$1.55	9x 9	$1.30	$3.45	12x12	$2.00	$6.00
7x7	.85	2.10	10x10	1.40	4.30	10x15	2.25	6.10
8x8	1.00	2.85	8x11	1.35	3.55	12x15	2.35	6.50
8x9	1.15	3.25	9x12	1.50	4.35			

Special sizes cut to order.

PARCHMENT BOX LININGS

Experience has proven that Parchment Liners are among the most profitable supplies a creamery-man can buy. We carry a very large stock of heavy Liners and guarantee the quality of these goods.

SIDE LININGS FOR ROUND BUTTER PACKAGES

Size	List	Size	List	Size	List
2 x12 in. per M	$0.40	4¾x22 in. per M	$1.50	6 x26½ in. per M	$2.45
2¾x14 " "	.60	5 x25 " "	1 95	6½x26 " "	2.60
3¾x18 " "	1.05	5 x26 " "	2.00	6½x32 " "	3.20
4 x24 " "	1.50	5¼x26 " "	2.10		

COMPLETE LININGS FOR PRINT BOXES

Size	List	Size	List	Size	List
5 x40 in. per M	$3 05	9x36 in. per M	$5 00	12 x36 in. per M	$6 60
5½x40 " "	3 40	10x22 " "	3 40	12½x20 " "	3 85
6 x40 " "	3 70	10x24 " "	3 70	13 x13 " "	2 60
8 x13 " "	1 60	10x28 " "	4 30	14½x24 " "	5 35
8 x46 " "	5 65	11x13 " "	2 20	15 x24 " "	5 50

Other sizes furnished at proportionate prices.

PARCHMENT TUB LININGS (Sides only)

When complete Liners are ordered, we send cloth for top and paper for bottom, with paper side linings, unless paper for the tops is ordered.

60-lb. tub size, per M	$15 00	40-lb. tub size, per M	$11 85	20-lb. tub size, per M	$8 40
56-lb. " "	14 50	30-lb. " "	11 50	10 lb. " "	5 00
55-lb. " "	14 00				

For price complete, add price of circles for top and bottom

AUSTRALIAN BOX LINERS

Per 100 ..... $.... Per M ..... $...

These Liners are heavy and made especially for these boxes.

PARCHMENT PAPER

16-in. rolls....per lb. $.... 36x40....per lb. $.... 24x36....per lb. $.... 36x60. ..per lb. $...

Special sizes furnished when desired.

WAXED PAPER

9x12, 400 sheets in package..... .....per pkg. $....

See our Monthly Price Current for Discounts and Prices

SALT

"GENESEE"

200-lb. barrels, paper lined, 1 to 10	each,	$.....
10 or more	"	.....
224-lb. Irish linen sacks, 1 to 10	"	.....
10 or more	"	.....
56-lb. Irish linen sacks, 1 to 10	"	.....
10 or more	"	.....
28 lbs. in linen sacks, 1 to 10	"	.....
10 or mere	"	.....
16-14 lbs. in English linen sacks, 1 to 10	"	.....
10 or more	"	.....
224-lb. English linen sacks, cheese, 1 to 10	"	.....
10 or more	"	.....
Fine grain dairy furnished at above prices.		
280-lb. barrels paste, per barrel	"	.....
60-10. ash tubs, holding 56 lbs. net salt	"	.....

A White, "Flaky" Grain, not too Fine—Made from Brine 99½ per cent Pure, Easily Dissolving and an Excellent "Keeper," Describes

MOULTON'S CADILLAC SALT

Sold at a reasonable price. Now in use by some of the largest butter manufacturers in the west.

BUTTER SALT

280-lb. bbls	$	.....
5 bbl. lots	discount	.....
10 " "	"	.....
224-lb. sacks	each,	.....
5 sack lots	discount,	.....
10 " "	"	.....
56 "	each,	.....
5 " lots	discount,	.....
10 " "	"	.....

CHEESE SALT

280-lb. bbls	each,	.....
5 bbl. lots	discount,	.....
10 " "	"	.....

DIAMOND "CRYSTAL"

224-lb. in linen sacks, 1 to 10	each,	$.....
10 or more	"	....
280-lb. barrels, 1 to 10	"	....
10 or more	"	.....
56-lb. in linen sacks, 1 to 10	"	.....
10 or more	"	.....

We also furnish Worcester and Vacuum Pan Salt at the lowest market price.

The Genesee Paste Salt is by far the finest on the market. Use it by all means—in the summer especially.

Can furnish full cars of dairy or mixed cars of dairy and barrel salt. Write for prices.

FOR PRICES SEE MONTHLY PRICE CURRENT

LACTIC FERMENT

OF PRICELESS VALUE TO BUTTER AND CHEESE-MAKERS

A perfect and uniform flavor the year round

Among recent improvements in dairying, the careful ripening of the Cream for Butter, and of Milk for Cheese, by means of Pure Culture of Flavor-producing Bacteria, has done more than anything else for the production of first-class goods of **high flavor, perfect aroma, keeping quality and uniformity.**

This preparation, offered to the dairymen under the name of Chr. Hansen's Danish Lactic Ferment, was discovered by Prof. V. Storch, of Copenhagen, Denmark, and is prepared exclusively by Chr. Hansen's Laboratory. It is put up in two sizes of packages, one "large," for creameries and cheese factories, and another "small" package for private dairies.

CHR. HANSEN'S DANISH LACTIC FERMENT

is used in the creamery, the cheese factory or the dairy, to prepare **"Startoline,"** which is made by adding the Ferment to pasteurized skimmed milk and let it stand to ripen for 18 to 24 hours. This Startoline is, in turn, used for ripening the cream for butter-making or the milk for cheese-making, and is propagated fresh every day by the dairyman himself.

How long the Startoline thus prepared can be maintained perfect without refuge to a fresh package of Lactic Ferment depends upon the care and cleanliness applied by the dairyman. Usually it is sufficient to renew the Startoline with fresh Lactic Ferment every two or three weeks only. About 20 packages a year will therefore be sufficient to maintain a supply of perfect Startoline, ensuring uniform flavor the year round.

Chr. Hansen's Lactic Ferment, being a dry powder, will keep for several months, if the seal of the package is not broken. It is therefore perfectly safe to order three packages at a time, and it is always advisable to have an extra package on hand, so as to start a fresh propagation of Startoline whenever desirable.

We advise every Creamery and Cheese Factory to order a year's supply in advance, say three packages to be shipped every six weeks or two months, in order to take advantage of the ten per cent rebate and to be sure not to run out of stock at any time.

Full directions are furnished with every package, and correspondence solicited.

PRICE LIST

LARGE PACKAGE

Single package, by registered mail, prepaid..$2 00
Three packages by express, prepaid, per pkg., 1 75

SMALL PACKAGE

Single package, by registered mail, prepaid.. 75
Three packages by registered mail, prepaid, per package..... 65

10% rebate if years' requirements ordered in advance order not to be less than 18 packages.

BUTTER COLORS

HANSEN'S DANISH

PURE ANNATTO COLORING

This is not the cheapest (per gallon) nor the strongest, and it is not claimed for it that it will color salt or other minerals permanently, but it is claimed, and has been demonstrated by its use by many leading dairymen in all parts of the world, that

IT IS THE PUREST
IT IS ABSOLUTELY HARMLESS
IT IS THE BEST

And therefore the most economical Butter Color made.

Sold only in original sealed packages put up by the manufacturers.

PRICES

48 one-gallon cans, in cases of 12 or 6 cans, per gallon.....$.....
Cases of 12 one-gallon cans, per gallon..... .....
Cases of 6 one-gallon cans, per gallon..... .....
Single one-gallon cans, jacketed, per gallon..... .....
20-oz. bottles, per bottle.....$..... Per doz. bottles..... .....
9-oz. " " .... " " " ....
4-oz. " " .... " " " ....
4-oz. " by mail, postage prepaid, per bot. ..... " " " ....

Butter Makers and Re-workers of Butter

Handling large quantities and wishing a cheap Coloring of High Quality should use

THE "COLUMBIAN" BUTTER COLOR

Which we guarantee to be the strongest in the market, and in every respect superior to any other, except Chr. Hansen's Danish.

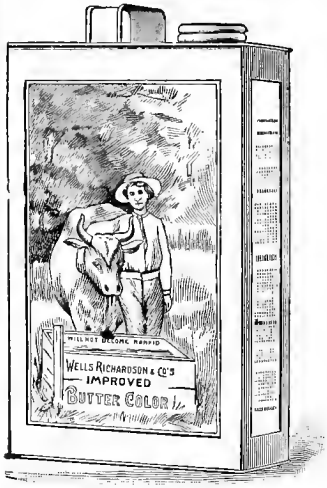
The Columbian Butter Color will not fade on salt. It is always clear as crystal, and considering its strength, **it is the cheapest in the market.**

Sold only in original sealed cans.

PRICES

40 one-gallon cans, in cases of 5 or 10 cans, per gallon..... $....
Cases of 10 one-gallon cans, per gallon..... ....
Cases of 5 one-gallon cans, per gallon..... ....
Single one-gallon cans, jacketed, per gallon. ....
One pint cans, per can. ....

WELLS, RICHARDSON & CO'S IMPROVED BUTTER COLOR



This Color is well known throughout the country. It is used in many of the large creameries and dairies, and gives universal satisfaction. The last drop in the can is as clear as the first. Guaranteed not to fade or color the buttermilk. The highest honors at the World's Fair were awarded to the Wells, Richardson & Co's Improved Butter Color.

READ THIS

DAIRY DEPARTMENT, IOWA AGRICULTURAL COLLEGE.

AMES, IOWA, August 14, 1897.

WELLS, RICHARDSON & CO., Burlington, Vt.

GENTLEMEN:—We have used your Butter Color at the Iowa Dairy School for the past three years, and it has given us the best of satisfaction. We have always found it clear from specks; and butter colored with it has that beautiful **June shade** so much desired.

Our trial shipments of butter to England for the United States Government were colored with it and pronounced perfect in color.

G. L. MCKAY,
State Dairy Inspector.

SIZES

Small bottle, to color 400 lbs.....$.....
Medium " " 900 " .....
Large " " 2,000 " .....
Single gallon.....
Five gallons, per gallon.....
Ten " " .....
Twenty-five gallons, per gallon.....

For prices see our Monthly Price Current.

FAIRCHILD'S DAIRY CLEANING COMPOUND.

Do you have trouble in having your milk delivered in clean cans, pure and sweet? If so, write to us for our system of interesting the patrons by giving free packages of a guaranteed pure, harmless cleaner to each patron absolutely free. Made to comply with the pure food laws, and for the perfect cleansing of creameries, dairies and cheese factories. Cheaper than soap powder, lye, soda or soap.

100-lb. cases, in 2 and 5-lb. packages, fifty free samples for patrons in every case...per lb. $.....
Also packed in 150-lb. kegs and 300-lb. barrels .....per lb. $.....

"KNO-GERM," THE ODORLESS DISINFECTANT.

A little "Kno-Germ" will kill that foul smell from that bad drain, and your skim milk weigher.

"Kno-Germ" is odorless and consequently does not kill a bad smell with some stronger odor.

"Kno-Germ" makes oxygen and purifies all foul places.

A little goes a great way. Free samples with every case of the "Dairymen's Can and Bottle Cleaner and Purifier."

"Kno-Germ" is the cheapest but by far the most powerful disinfectant made.

1-lb. packages.....per lb., $..... | 5-lb. packages.....per lb.. $.....

Try Fairchild's Powdered Brilliant Metal Polish. It will brighten up your separator engine trimmings and tinware. Put up in 1-lb. packages.
Price, per dozen.....$.....

GOLD DUST

FOR CLEANING PURPOSES

Each Box Contains 24—4-lb. Cartons

Price, 5-box lots.....per box, $.....
Less than 5-box lots..... " .....

SAL SODA

FOR GENERAL CLEANING PURPOSES

PRICES

Per lb.....$.....
Kegs about 150 lbs..... .....

HOUSE SAVOGRAN

This is a pure alkali cleansing powder, and a perfect substitute for soap or soap powder and is a good disinfectant.

PRICES

Kegs, 60 to 70 lbs..... .....per lb., $.....
Kegs, large, 120 to 130 lbs..... " .....

OZALINE

A fine disinfectant for factories and dairies. Removes every offensive smell at once.

Its use in creameries and dairies is of untold advantage, as it kills all germs in the air, gives off oxygen and thus keeps the air pure, and by this means helps to keep butter, milk and cream sweet. Positively odorless and ever active. Contains no carbolic acid nor chloride of lime. In use by hundreds of creameries.

SIZES AND PRICES

10-pound boxes.....price, per box, $.....
25 " " ..... " " .....
50 " " ..... " " .....
100 " Kegs..... " " keg, ...
Also in ½ bbls. and barrels. Discount on quantity.

For Prices see our Monthly Price Current

TUB FASTENERS

IDEAL.

TIN AND TACK COMBINED

We can recommend to consumers as being far superior to any device known for safe transportation and preservation of the contents of the package.

No lacerating and poisoning the hands.

Receivers of butter in all sections are strongly urging shippers to encourage among creameries and dairymen the use of the Ideal Fastener in preference to any other. The Ideal is quickly applied and can be easily withdrawn to examine butter, and can be re-used. Remember, the Ideal is a time, labor and money-saver to every creamery, butter-maker or shipper.

We are the exclusive Western Agents for these Fasteners.

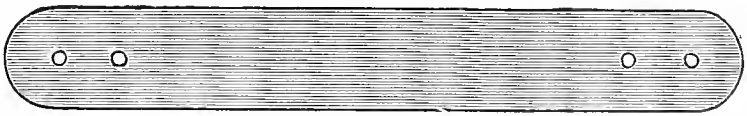
Try the Ideal. We guarantee satisfaction. Send for circular and prices. Samples free.

PRICE LIST

Packed 500 in a package.

Per 1,000..... $....

"COMMON TINS"



1,000 in a package.

Per 1,000..... $....
" 1,000 in 10,000 lots..... ....

NAILS AND TACKS

⅝-in. wire nails, per lb..... $....
10-oz. Swede tacks, per lb..... ....

For Prices see our Monthly Price Current

TUB FASTENERS

"RIVETED"

PRICES

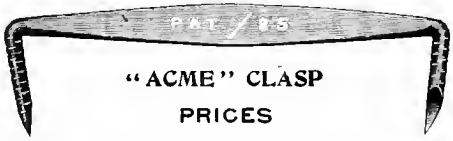
1,000 lots, per M.....$....
5,000 " " .....
10,000 " " .....

"BAIL BOX"

Made similar to the Excelsior, but end not folded.

PRICES

1,000 lots, per M.....$....
5,000 " " .....
10,000 " " .....



"ACME" CLASP

PRICES

	No. to Lb.	Length.	Per Lb. Coppered.	Per Lb. Galvanized.	Per Lb. Solid Tinned.
No. 9.....	150	2½ in.	$....	$....	$....
" 10.....	145	2¾ "	....	....	....

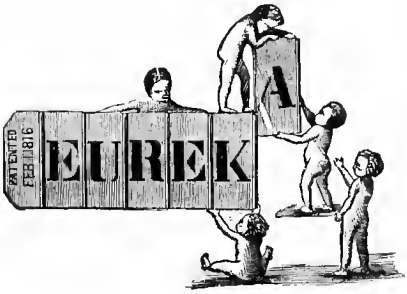
"DE HAVEN"

USED LARGELY ON CHEESE BOXES

PRICES

Per lb.....$.... | 25-lb. boxes.....per lb., $....

STENCILS



LETTERS

Alphabets of 33 pieces, in boxes, as follows: 26 letters of the alphabet, 1 &, 1 beginner, 1 ender, 1 period, 1 apostrophe, 1 comma and 1 blank.

½-inch	$0 65
¾ "	70
1 "	80
1½ "	1 00
2 "	1 40
2½ "	2 00

FIGURES

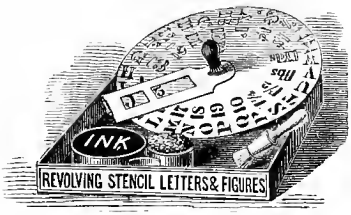
Figures, in sets, as follows: 1, 2, 3, 4, 5, 6, 7, 8, 9, 0; 1 dollar mark, 1 cent mark, 1 figure period, 1 beginner, 1 ender.

½-inch	$0 25
⅜ "	30
1 "	35
1½ "	45
2 "	65
2½ "	95

REVOLVING STENCIL LETTERS AND FIGURES

Alphabet and Figures, Combined

¼-inch	$1 25
⅜ "	1 25
½ "	1 25
¾ "	1 50
⅝ "	1 50
⅞ "	1 75
1 "	2 00
1¼ "	2 50
1½ " no figures	2 00



Figures Only

¼-inch	$0 60
⅜ "	60
½ "	70
⅝ "	70
¾ "	80
⅞ "	80
1 "	80
1¼ "	1 00
1½ "	1 25

MONTHS AND DATES

Same pattern as revolving stencil letters and figures.

Price..... $1 75

CREAMERY STENCIL

BRASS

We make a specialty of getting out stencils of all kinds, and cut any design desired.

Stencils like accompanying cut, and with wording similar,

PRICES AS FOLLOWS:

Small, 7x10 inches	Each,	$1 50
Large, 10x14 "	"	2 00

Other styles, per letter, 6c.

STENCIL PASTE.

One of our specialties is stencil paste, or ink, which we manufacture in three colors—black, blue and red. For stencil work you will find this very desirable, as it will not rub off. It is used largely by most creamery men, and gives the best satisfaction. We also furnish stencil brushes at prices quoted on opposite page.

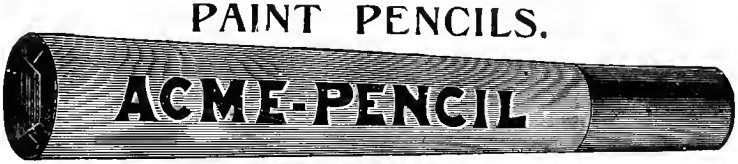
PRICES.

Small box, black, each		$0 20
" " "	per dozen	1 75
Large " "	each	50
" " "	per dozen	5 50
Small " blue, each		30
" " "	per dozen	3 00

Other colors furnished on order.

Marking Pots ..... **each, 20c.**

PAINT PENCILS.



This will be found very useful for marking boxes, etc. It is economical and convenient.

Price, each ..... $0 05 Per dozen $0 50

LUMBER CRAYONS.

For marking weights, each .... $0 10 Per dozen $1 00

FACTORY BROOM.

Iron bound, fastened by strong wire.

Price, each $0 40

MOPS.

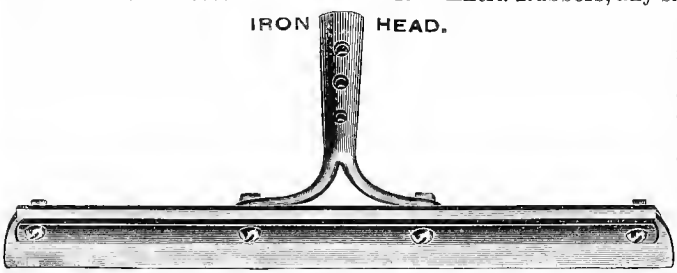
WOOD HEAD.

This head is made of hard wood, with pure rubber, and is preferred by many, and has the advantage of being cheap.

PRICES.

12 inch	each, $0 25	14 inch	each, $0 30
16 "	" 40	Extra Rubbers, any size	per ℔., 80

IRON HEAD.

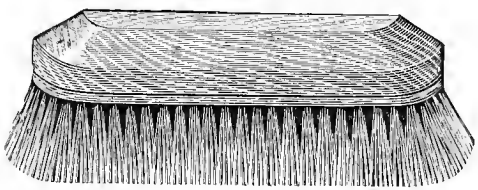


This Mop is almost indespensable to any creamery or cheese factory, as a wet floor can be cleaned and dried with it very rapidly. The iron head holds a rubber same length as mop—made of pure gum—which, when worn out, can be removed and replaced by a new one.

PRICES.

14 inch	each, $0 65
17 "	" 1 00
Extra Rubbers	per ℔., 60

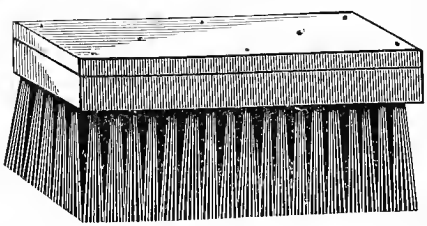
BRUSHES.



HALF ROUND FLOOR.

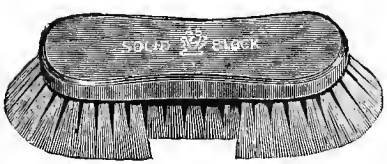
A very serviceable brush for all purposes.

Each	$0 40
Per dozen	4 00



STEEL FLOOR AND SHELF.

Each	$ 1 25
Per dozen	12 00



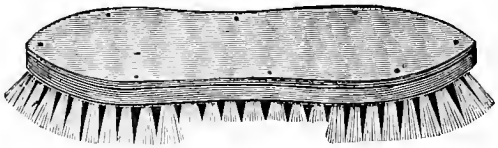
A. B. C.

This is the best brush on the market for dairy purposes.

6 inches	each,	$0 25
6 "	doz.,	2 50
4 "	each,	20
4 "	doz.,	2 25

BRUSHES

We can furnish anything in the line of first-class brushes. Below we give a list of our regular stock sizes:



12-inch

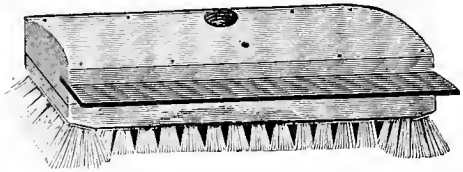
PRICE

12-in. rice root, per doz..... .....
Each..... .....
11 " rice root, per doz..... .....
Each..... .....
12 " Tampico, white, per doz..... .....
Each..... ....

6-inch

PRICE

6-in. Rice root, per doz..... ....
Each ....
4 " Palmettto..... .....
Each ....



FLOOR BRUSH

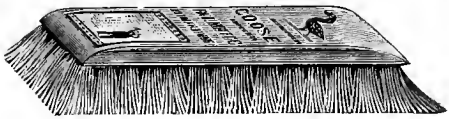
This is a mop and brush combined.

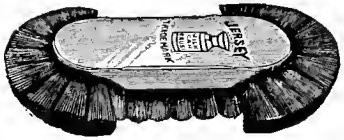
PRICE

Per doz..... .....
Each..... .....

PALMETTO BRUSH

No. 1 "Duck," 6x2½ in., each, ...
" 4 "Goose," 7½x3 " " .....
" 50 "Alligator," 9x3 in. " .....





JERSEY CAN BRUSH

BEST ON THE MARKET

PRICE

Per doz..... .....
Each..... .....

COMPOSITE TEST JAR BRUSH

GREY, WOOD HANDLE

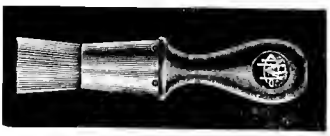
Per doz..... .....
Each ....

BABCOCK TEST BOTTLE BRUSH

Per doz..... .....
Each..... ....

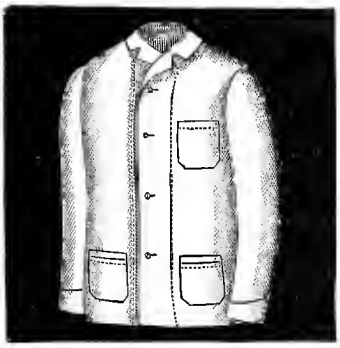
STENCIL BRUSH

Small .....per doz., ... each, ...
Large ..... " ..... " .....



WHITE DUCK SUITS

FOR BUTTER AND CHEESEMAKERS



COAT

PANTS

We have received so many calls for these goods during the past year that we have added them to our line. Like our other goods, they are first-class in every particular. They are made from the best Pullman White Duck. Nothing has a better effect on the patron than a clean factory and a clean maker.

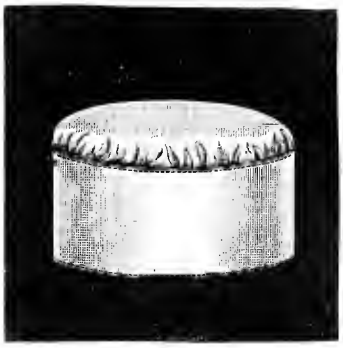
In ordering give chest, waist and inside leg measures.

PRICES

CAP, 25c COAT, $1.25 PANTS, $1.50 APRON, 50c

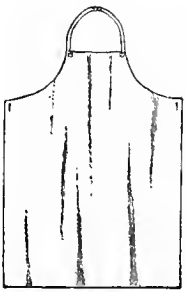
FULL SUIT, $3.25 TWO SUITS FOR $6.00

APRON



CAP

APRONS



"STANDARD"

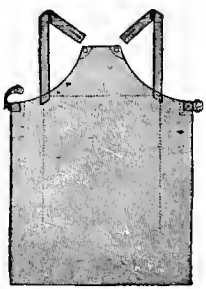
Standard Sheeting Aprons are made of strong sheeting, lined throughout, thoroughly oiled and durably made, are finished with cloth straps to suspend from neck. Are worn by dairymen and others desiring a waterproof apron that is convenient and light.

Length, 41 to 45 inches; width, 36 inches.

In yellow or black.

Price.....$0 75

"IDEAL"



Ideal Canvas Aprons are made of special woven heavy duck, lined with heavy sheeting, thoroughly oiled and durably made; are finished with cloth shoulder straps, and leather strap and buckle to fasten around waist.

Length, 52 inches; width, 40 inches.

In yellow or black. Price.....$1 25

FISH BRAND

These aprons are made from canvas and are heavily oiled. They have been thoroughly tried in and about creameries and cheese factories and give universal satisfaction.

Price, No. 1, long; No. 2, medium; No. 3, short, each $0 85

RUBBER

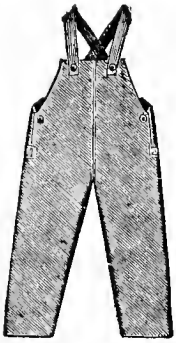
This represents a large rubber apron, much used by butter and cheese-makers to protect their clothing while at work. With fair usage, one will last a long time. Just what is needed when making composite tests, as acid will not affect the rubber.

Light Black.....each, $1 50
Heavy Black..... " 1 75
White..... " 2 25

WHITE DUCK

Generally used with butter-makers' suits. Each.....$0 50

OILED APRON-PANTS

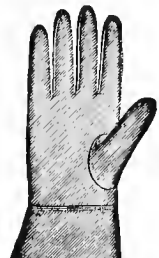


Challenge Oiled Apron-Pants are manufactured of fine, strong cloth specially woven from carefully selected, long, staple cotton, heavily and thoroughly oiled and very durably made, producing a popular, reliable oiled pants. Have patent eyelet fastened zinc buttons, with smooth backs, preventing the catching or tearing of clothing, and will not rust or corrode.

Size 1—	waist	40	leg	31
" 2	"	38	"	30
" 3	"	36	"	29

Made in yellow.....$1 25
Made in black..... 1 50

RUBBER GLOVES



Net-Lined, best on the market. For use in handling acid and making composite tests.

ONLY ONE SIZE

PRICE

Light, Short, each, $1 50, with Gauntlet.....$2 00
Heavy " " 1 75, " " 2 25

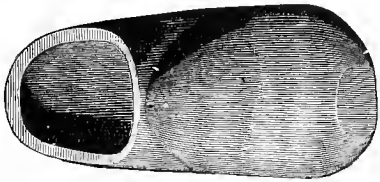
FINGER COTS

Assorted Sizes

Something that should be in every Factory

Light, per doz.....$ 1 00
Heavy " 1 50

BADGER WOODEN SHOES



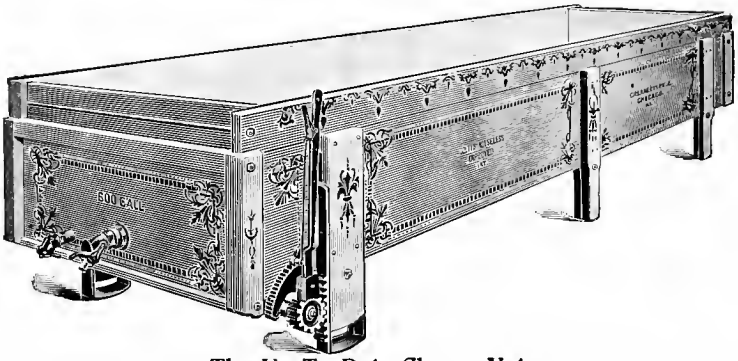
Made of second growth basswood, hand made, kiln dried and smoked. You never get cold feet in them. Just what every farmer wants. We have them in large sizes.

Price, per pair (common)..... $ 75
" " (leather top, lined)..... 1 75

In ordering Pants, Gloves and Wooden Shoes always state size

CHEESE FACTORY VATS

WITH STEAM PIPES



The Up-To-Date Cheese Vat

Our Cheese Vats are constructed throughout in the most substantial manner. The wood vats are made of pine, which experience has shown to be the best wood for this purpose, and the best and heaviest tin plate is used for the tin vats. Our vats are made with channel bottoms sloping from the sides to the center, the slope increasing toward the outlet. By this arrangement it is not necessary to tilt the vat to draw off the entire contents. The tin vats are painted on the outside to prevent rusting.

The rail to which the tin vat is attached does not project beyond the body of the vat. The sides of the vats are kept from bulging by spreading rods, and Perfection Gates are furnished for outlets.

Our Steam Mufflers are attached to the steam pipes, which makes the heating-up process noiseless.

We call special attention to the greatly increased durability of vats with copper bottoms or full copper linings.

SIZES AND PRICES

	Tin Lined.	Copper Bottom.	Copper Lined.		Tin Lined.	Copper Bottom.	Copper Lined.
100-Gallon Vat.	$32 50	$52 55	$62 50	600-Gallon Vat	$ 60 00	$ 85 00	$105 00
200 " " .	40 00	50 00	65 00	700 " "	70 00	88 00	115 00
300 " " .	45 00	60 00	70 00	800 " "	80 00	95 00	125 00
400 " " .	50 00	70 00	85 00	1,000 " "	100 00	105 00	135 00
500 " " .	55 00	80 00	100 00			115 00	145 00

Special sizes made to order.
For prices on Up-To-Date Cheese Vat add $10.00 to list.

PRICES OF EXTRA TIN LININGS WITH RAILS

100 Gallons	$14 00	600 Gallons	$31 00
200 "	16 00	700 "	34 00
300 "	18 00	800 "	37 00
400 "	24 00	1,000 "	44 00
500 "	27 00		

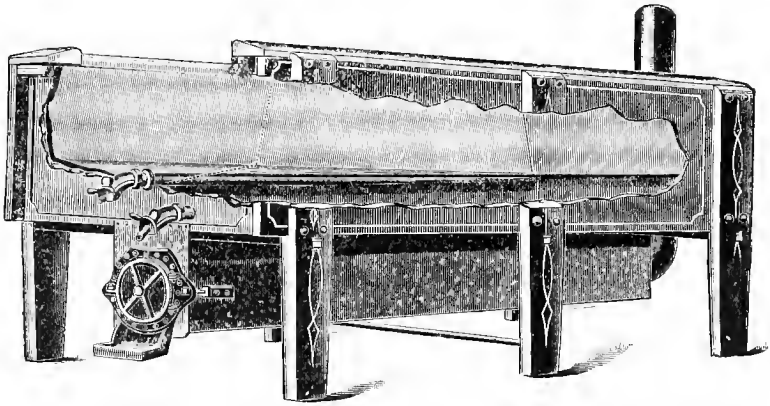
STANDARD SIZE CHEESE VATS WITH TILTER

Capacity in gallons	1000	900	800	700	600	500	400
Width, outside wood jacket	64	57	52	46	46	46	46
Height, outside above floor	38	38	38	38	38	20	38
Length, outside	184	184	184	184	184	166½	150
Capacity in gallons	300	250	200	150	100	75	50
Width, outside wood jacket	39	39	39	39	31½	30½	25
Height, outside above floor	36	36	36	36	36	36	36
Length, outside	135	115	93½	76	69½	33½	33

SELF-HEATING CHEESE VAT

WITH CHANNEL BOTTOM

(PATENTED)



The self-heating cheese vat has been in use for more than fifty years, and during this time has given general satisfaction.

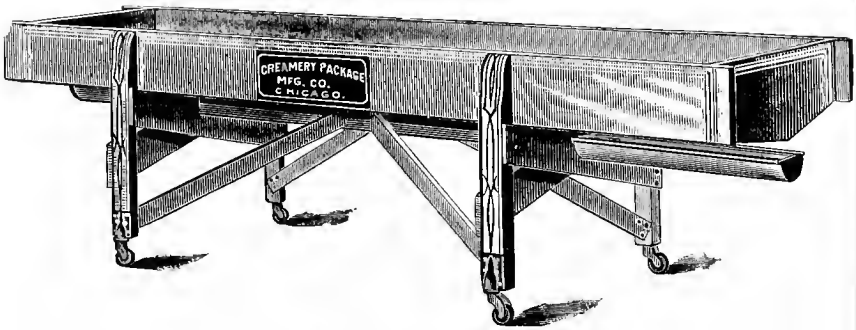
The temperature of the vat cannot be controlled as readily as it can by steam, and there is more dust and ashes from the fire-box than from a boiler, yet where room is limited, and economy must be practiced, the self-heating vat, with channel bottom, will give good satisfaction.

The importance of the channel bottom in cheese vats — to facilitate drawing off the whey by the use of the whey strainer, with tube especially for it — can hardly be over-estimated. With good cheese-making implements there should be no excuse for poor cheese, when good milk is delivered at the factory.

Sizes and Prices of Self-Heating Vats with Channel Bottom.

75 gallon Vat	$ 35 00
100 " "	40 00
150 " "	50 00
200 " "	60 00
300 " "	70 00
400 " "	80 00
500 " "	90 00
600 " "	100 00

CURD SINKS



With Castors and Whey Spout Complete

	Tin Lined	Copper Lined
10 feet long x 3 ft. 2 in. x 9 in.	$23 00	$30 00
12 " " x 3 ft. 2 in. x 9 in.	25 00	32 00
14 " " x 3 ft. 2 in. x 9 in.	30 00	36 00

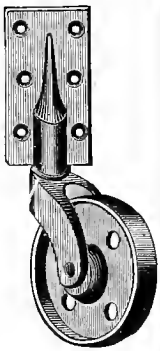
PERFORATED TIN

For repairing Curd Sinks, Strainers, etc., furnished in I. C. thickness and in 10x14 in. and 14x20 in. sheets.

	1 Extra Fine	2 Fine	3 Medium	4 Coarse	5 Extra Coarse
No. Holes per in.	18	15	12	10	8
10x14 Sheets per doz.					
14x20 Sheets per doz.					

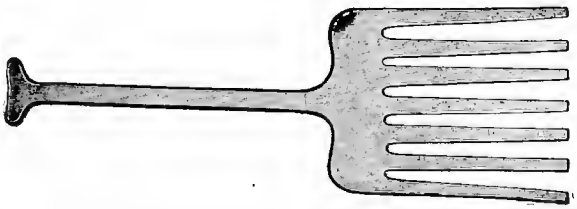
MARKET PRICE

CURD SINK CASTORS

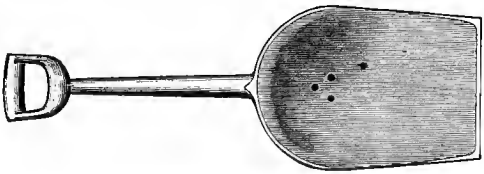


3-inch wheels, per set of 4 ..... $1 75
5 " " " 4 ..... 2 25

CURD FORKS



This is designed as a curd fork for handling curd. Every cheese-maker will see the value of it at once.
Price ..... each, $0 75

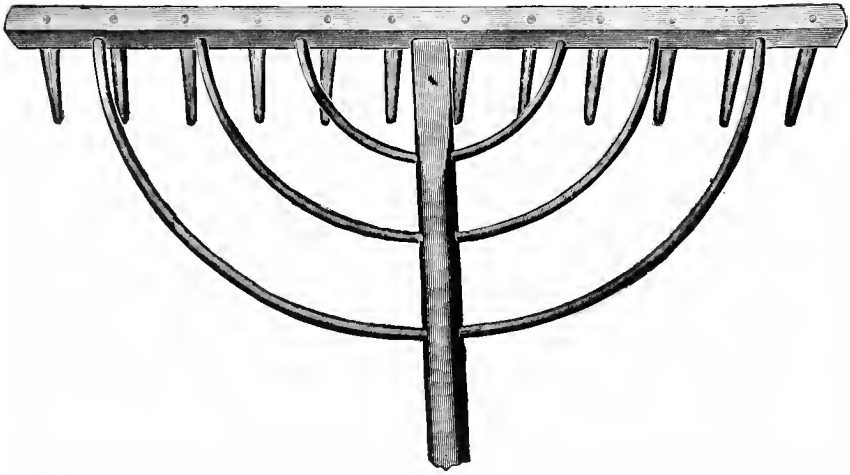


CURD SCOOPS

This scoop is made from wood and is strong and durable.

Short handle ..... each, $0 60
Long " ..... " 75

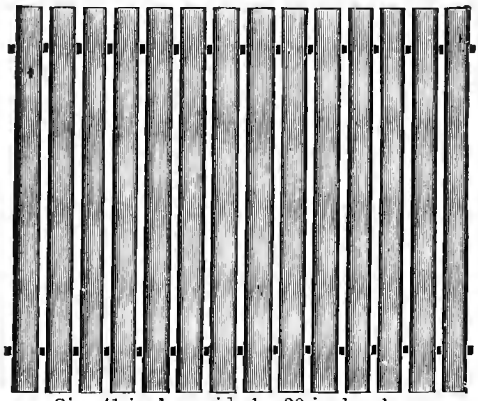
THE ACME CURD RAKE.



We have this rake made especially for our own trade. It is strong and substantial, having three bows. It is not a common hay rake with the handle cut off, but made for use in a cheese vat.

Price $0 50

CURTIS' IMPROVED CURD RACK.



Size 41 inches wide by 30 inches long.

This is one of the very important implements used in the improved method of making cheese.

It is placed in one end of the bottom of the vat, after the whey is drawn, covered with a strainer cloth and the curd placed thereon, where it is kept warm for the acid to develop in the curd. Two or three may be used, according to the size of the vat and the amount of curd.

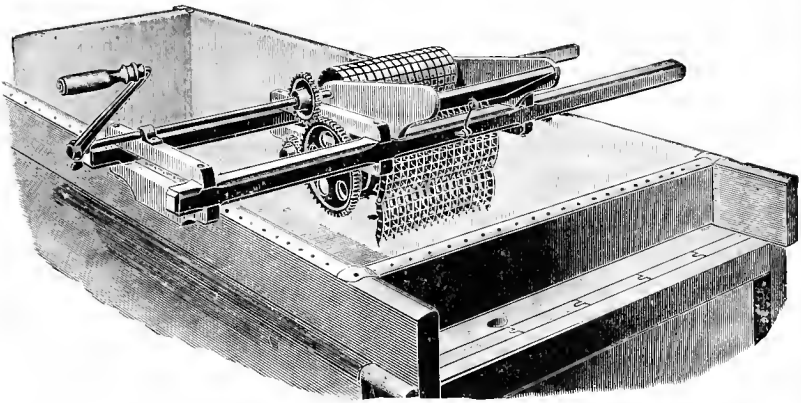
It is used at the Experimental Station in giving instructions to cheese-makers and is pronounced faultless.

It is made in such a manner that it can be kept scrupulously clean, one of the important things with all cheese-making implements.

Price..... $2 00

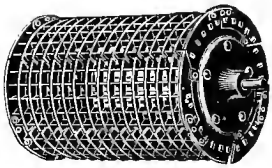
CURD MILLS.

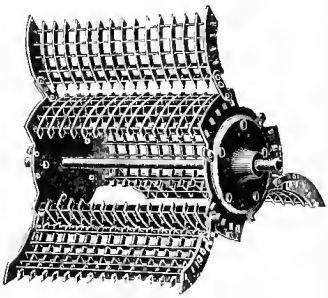
KASPER ROTARY.



The demand for a large capacity Curd Mill, for cutting curd into cubes, has induced the inventor to bring out the Kasper Mill. In the construction the mill consists of a rotary cylinder made of knives in the form of cubes. Against these knives a wooden roll revolves, with indentations to fit the knives of the cylinder; the curd being forced into the hopper is forced through the openings in the cylinder by the wooden roll.

The cylinder is made in three sections, hung on hinges and, as it revolves, each section, as it comes to the lower part of the cylinder, opens and allows the curd to drop into the vat, the section closing again as the cylinder revolves, one of the three sections being always open.





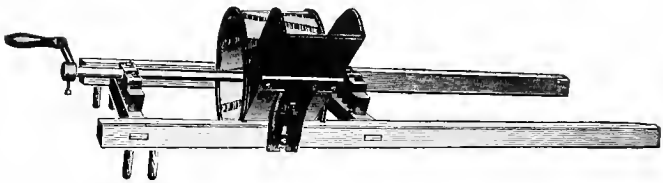
Two views of the cutting cylinder are shown herewith, the first closed, the second open.

It is estimated that the curd from 7,000 lbs. of milk can be cut in from seven to ten minutes. The mill operates easily, being light running and adjustable to either hand or belt power. Simplicity of construction, durability, and ease of cleaning are some of its principal features. All parts being galvanized, or tinned, prevents rusting. Weight of the machine complete is about 38 pounds.

List Price.....$25 00

CURD MILLS

GOSSELIN

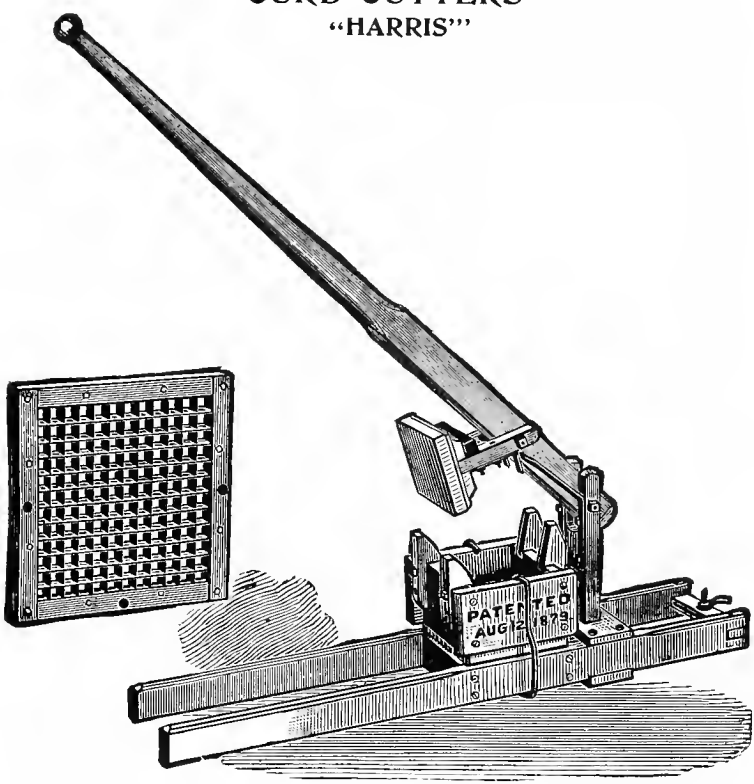


This style of mill has been used for several years in Canada. We have recently introduced it in this country. It is one of the most satisfactory mills ever placed on the market. Our customers who have used it are well pleased. It shoves the curd into thin slices and at the same time slits it getting it into the most desirable shape. It is made strong and durable and is easily operated.

Price.....$20 00

CURD CUTTERS

"HARRIS"



Price.....$15 00
Extra knives.....net, per set, 3 00

CURD MILLS.

POHL SELF-SALTING.

Power mill, complete,	with salting attachment	$26 00
" " "	without salting attachment	24 00
Hand mill, "	with salting attachment	24 00
" " "	without salting attachment	22 00

SCHAUBLE IMPROVED POWER.

DESCRIPTION AND PRICES.

Revolutions of driving pulley, 140 to 150 per minute. Diameter of driving pulley, 14 inches. Face of driving pulley, 3 inches. Total shipping weight, 162 pounds.

Price, each.....$25 00

ELGIN.

Diameter of pulley, 7 inches. Face, 3 inches. Speed, 175 to 225 per minute to suit operator. Weight, 85 pounds.

Price, each.....$16 00

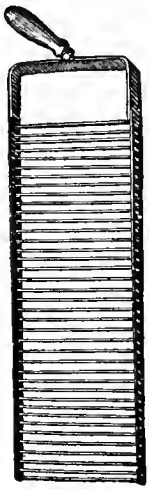
MACPHERSON.

Price.....$23 00

IMPROVED CURD KNIVES

TINNED STEEL

These knives have no wood about them except the handle. The blades are of steel, ground to an edge, and tinned over to prevent rusting.



Horizontal.

HORIZONTAL

4 in. wide,	20 in. long			$4 00
6 "	20 "			5 00
8 "	20 "			6 25
10 "	20 "			7 50
12 "	20 "			9 00

PERPENDICULAR

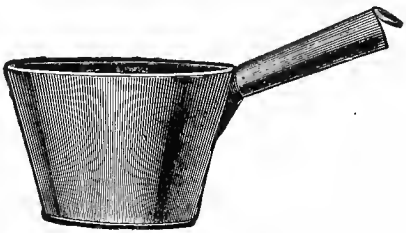
4 blade knives,	20 in. long			$2 50
6 "	"	20	"	3 00
8 "	"	20	"	3 50
10 "	"	20	"	3 75
12 "	"	20	"	4 50
13 "	"	20	"	4 85
14 "	"	20	"	5 00
15 "	"	20	"	5 50
17 "	"	20	"	5 80
20 "	"	20	"	6 25
30 "	"	20	"	11 00

Perpendicular.

TINNED CHEESE KNIVES

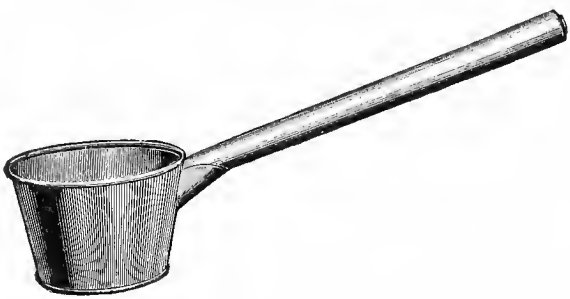
Each.....$1 00

SHORT HANDLE DIPPERS.



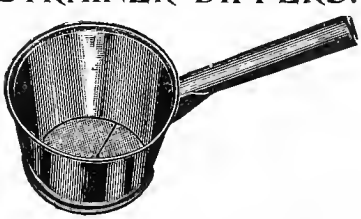
One gallon, each.....$0 50

LONG HANDLE DIPPERS.



Each.....$0 60

STRAINER DIPPERS.

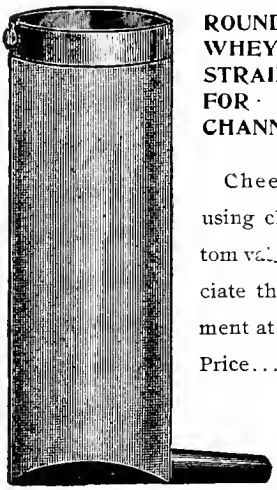


This dipper has a heavy rim on bottom to protect strainer.
Each.....$0 75

CURD SCOOP.

Made of heavy tin. The edges are wired and carefully soldered, which makes a strong scoop.
Price, Light.....$0 60
" Heavy..... 65

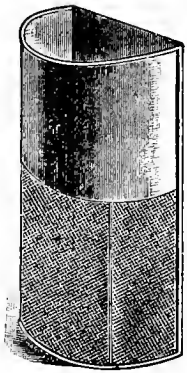
CHEESE FACTORY TINWARE



ROUND WHEY STRAINER FOR CHANNEL VAT

Cheese-makers using channel bottom vats will appreciate this improvement at a glance.

Price.....$1 10



HALF ROUND WHEY STRAINER

For either flat or channel bottom vats.

PRICE

Without Spout $0 85
With spout... 1 00

State whether for flat or channel bottom vat.

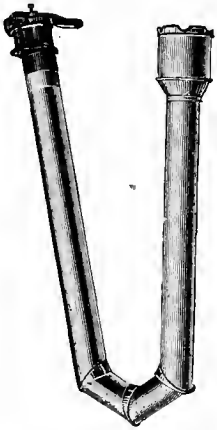
SIPHONS

PLAIN

Used for removing milk from one vat into another.

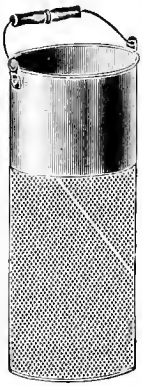
Price.....each, $0 85

WITH GATE AND VALVE



This siphon, with gate and valve, will be found very serviceable where a siphon is used. It is much better than the old kind, and may be ordered with the plain strainer.

Price $1 75

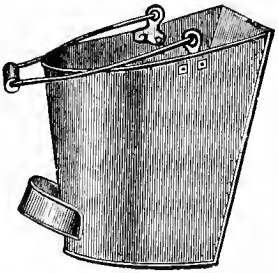


WHEY STRAINER

This illustrates the oldest style of whey strainer; every cheese-maker knows just what they are.

Without spout..... $0 85
With spout..... 1 00

FLAT SIDE CURD PAIL



Best four-cross charcoal, tin, price:

Light....$1 25
Heavy.... 1 50

Double the lists to obtain the price on above goods furnished in tinned copper.

MILK CANS.

"ELGIN" PATTERN.

Made of steel, heavily tinned.

All Elgin Pattern railroad cans of our manufacture are furnished with patent improved protected can breasts, without extra charge.

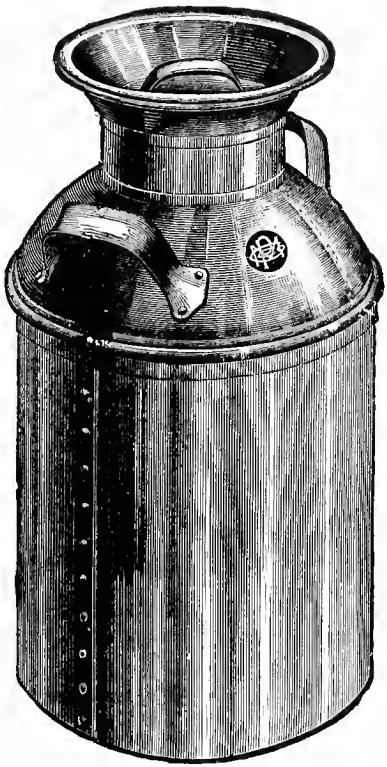
Sets of stock consists of full set of trimmings and cylinder.

CANS NOT MADE UP.

8-gallon.....per set, $.....
10 " ..... " .....
With bossed handles and galvanized bottom hoop, extra, per set, ...

CANS MADE UP.

8-gallon.....each, $ .....
10 " ..... " .....



ELGIN

IOWA OR DUBUQUE

"IOWA" OR "DUBUQUE" PATTERN.

Made of steel, heavily tinned.

All Iowa or Dubuque Pattern railroad cans of our manufacture are furnished with patent improved protected can breasts without extra charge.

Set of stock consists of full set of trimmings and cylinder.

CANS NOT MADE UP.

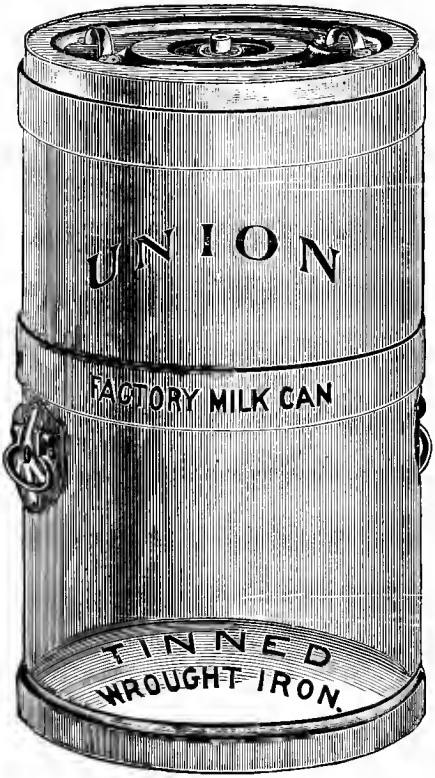
5-gallon.....per set, $.....
8 " ..... " .....
10 " ..... " .....
With bossed handles, extra " .....

CANS MADE UP.

5-gallon.....each, $.....
8 " ..... " .....
10 " ..... " .....

MILK CANS.

UNION.



The Union can is acknowledged to be the strongest and lightest milk carrying can in the market. It has the latest improvment in bottoms for cans carrying milk. It consists of a concavo-convex disc stamped from heavy wrought iron plate, and a hoop made of iron manufactured for this special purpose. Both are thoroughly tinned. They are put together in such shape as to mutually strengthen each other, and virtually form one solid piece. The bodies are made of large sheets of tin, with only one seam lengthwise of the can. The inside presents a smooth surface, easily cleaned. This is a valuable feature. The cover is so made that it fits smootly and perfectly, avoiding all slopping and waste of milk.

CANS MADE UP.

20 gallon.....
30 " .....
40 " .....
50 " .....

STOCK COMPLETE.

20 gallon.....
30 " .....
40 " .....
50 " .....

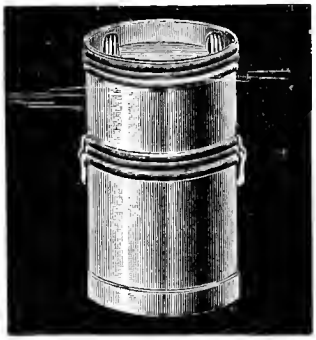
A set of stock consists of one large sheet of heavy tin for body, bottom, cover, top hoop, center band, side and cover handles.

HODO.

This is an exceedingly cheap, strong and durable can for hauling milk to the factory.

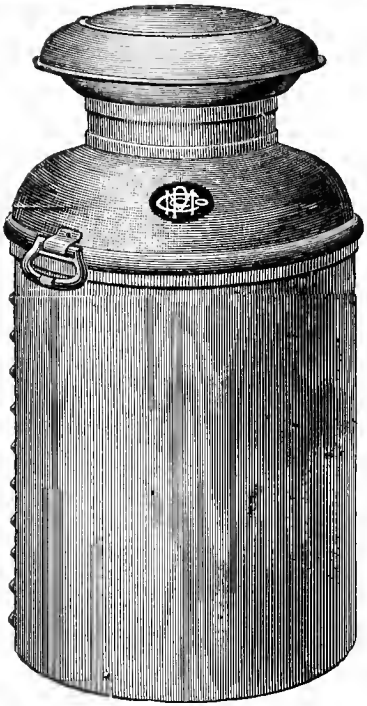
It will be found quite as serviceable as cans costing one-third more money.

Furnished made up only.



SIZES AND PRICES.

15 gallon.....$3 40
20 " 3 85
30 " 4 75



NEW YORK

MILK CANS

NEW YORK PATTERN

These Cans are strong and durable. Seams well riveted and soldered smooth. Free from cracks or crevices. First-class cans in every particular.

5 gallons.....each, ...
7½ " ..... " .....
10 " ..... " .....
12½ " ..... " .....

MILK CAN, LETTERS, LINKS AND LOCKS

LETTERS AND FIGURES TINNED ON BACK

Copper, 1⅜-inch, per 100.....$1 00
Brass, 1¾-inch, per 100..... 1 20

LETTERS

LINKS

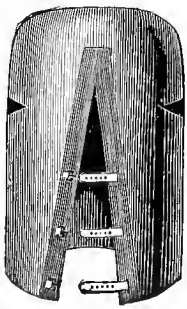
Price, per doz., $0 60

LOCKS

Price, each...$0 50

Tinned washers for link hole, per pound..... 12

SHIPPING CAN JACKETS



These Jackets are made from ¾ inch hair felt. The felt is lined and covered with heavy canvas; the buckles and straps are of the strongest quality, and in all, the Jacket is durable and efficient.

SIZES AND PRICES OF SHIPPING JACKETS

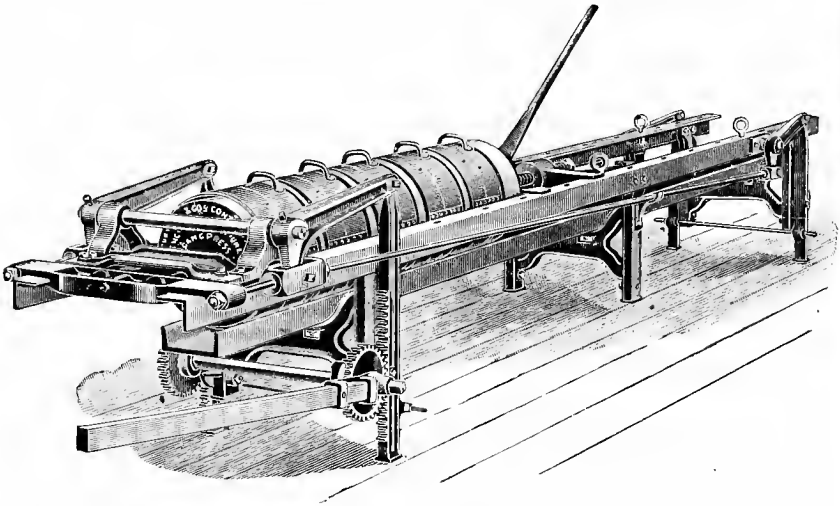
For the New York, St. Louis, Chicago, Elgin, Dundee, Teets and Dubuque Cans—

20-qt. Size ¾ in. Felt..each, $2 75 Per dozen..$31 00
32 " " ¾ " " .. " 3 00 " " .. 34 00

40-qt. Size ¾ in. Felt..each, same price as 32-qt.

Prices on Jackets made from 1-inch and ½-inch Felt given on application.

THE "HELMER" PATENT CONTINUOUS PRESSURE STEEL GANG CHEESE PRESS



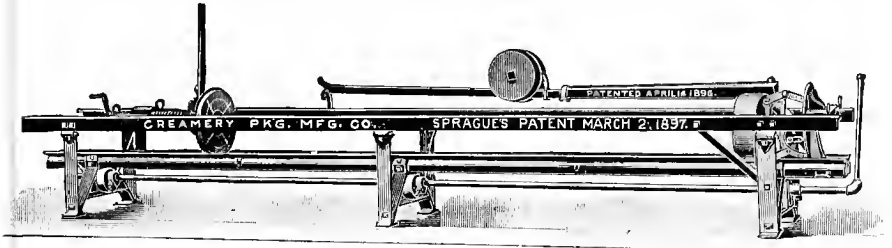
The Helmer Patent Continuously-Increasing Pressure Press has now been on the market four years, and a large number have been sold. It was the first thoroughly practical continuous pressure cheese press and it has thoroughly proven the claims that we made for it when it was first placed on the market: namely, that it effects a great saving in labor and that it produces a better cheese, especially of more uniform texture. For the past two seasons we have been manufacturing this press of the new steel frame construction, as shown in the cut. The working of the press is entirely automatic. It is operated in the same way as the old style gang press; by simply working the lever, the press rises from the floor, thereby utilizing the weight of the press and cheese themselves in keeping a pressure on the cheese. It is the first and only press to successfully do this and to automatically press the cheese without the use of any outside weights. After the cheese have been put to press, the press gradually settles down towards the floor, and the automatic mechanism keeps a constant pressure on the cheese, taking up the slack so that after the press is once run up it requires no further attention.

In order to insure the greatest success with the automatic presses, we request and advise our customers to use hoops of our manufacture as they then will be sure of freedom from buckling and will have a correct standard of sizes. It is important, to obtain the best results, to have the hoops right in every way.

PRICE (WITHOUT HOOPS)

For pressing from 10 to 20 cheese, depending upon the thickness, diameters 13½ to 16 inches.....$75 00

THE PATENT "SPRAGUE AUTOMATIC" ADJUSTABLE STEEL GANG PRESS



The **Patent Adjustable Steel Gang Press** represents the latest improvement in Gang Presses. Its special and distinctive feature is that the *side rails are laterally movable*, so that the width of the press is variable and adjustable. The movement of the side rails is controlled by the upright lever shown in cut at right-hand end of press. When this lever is drawn in one direction it spreads the side rails, and when pushed over in the opposite direction it draws the side rails together and *clamps or locks the hoops in the press.*

PRICES WITHOUT HOOPS

With Automatic Pressure Block, complete.....$85 00
Without " " " 68 00

PRESSURE BLOCKS

THE PATENT "SPRAGUE" AUTOMATIC

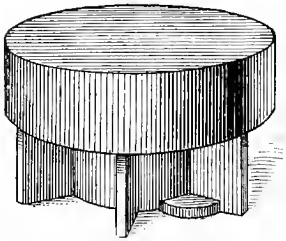
FOR USE IN STEEL OR WOODEN FRAME GANG PRESSES USING 13½ TO 16-INCH DIAMETER CHEESE HOOPS

PRICES

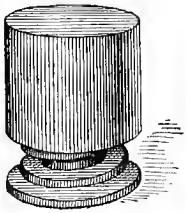
For 13½ to 16-inch diameter cheese.....$17 00
For Y. A. cheese, made to order..... 10 00

CONTINUOUS PRESSURE BLOCKS.

For Use in Gang or Upright Presses.



These Pressure Blocks provide a simple method of keeping up a continuous pressure on the cheese while being pressed. The blocks are placed between the hoop and the driver, or follower, and are so provided with springs as to keep up the pressure as cheese shrink in thickness. They are a very cheap and useful article.



On account of construction, the springs being covered, they are easily kept clean.

Price for large press.....$6 00; Same galvanized.....$8 00
Price for Young America Press... 5 00; Same galvanized..... 7 00

NEW STYLE STEEL "FRAZER" GANG PRESS.

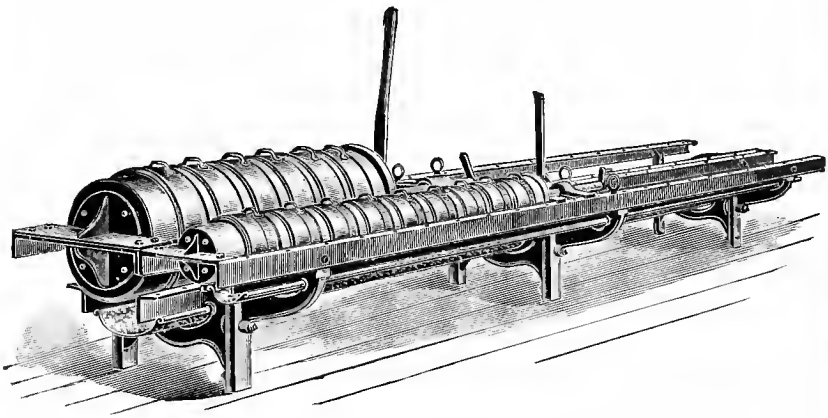
Our new Steel Press is of great durability and strength—easily kept clean and sweet, so necessary in *all* cheese implements. We also make a *Single* Gang Steel Press for Young Americas.

It is safe to say that a steel press will last twice as long as the ordinary wood press. Wood presses for both Cheddars and Young Americas furnished when wanted.

SIZES AND PRICES

Standard size, 16 ft. long	$45 00	Young Americas, double row	$50 00
Special sizes, 12 and 14 ft. long	43 00	Young America and Cheddar double row	$60 00
For Young America Cheese	40 00		

COMBINATION STEEL GANG PRESS.



As can be seen from the cut the combination press takes two side by side gangs of cheese, on one side the large diameter cheese from 13½ to 16 inches in diameter, and on the other side a gang of Y. A. or 7 inch cheese, The press consists of one of our Standard Steel Gang Presses, with the Y. A. parts bolted on one side and supported by three bracket castings. Capacity twelve 10 inch deep large cheese, and 21 Y. A. or 7 x 7 cheese. Shipping weight, 800 lbs. Length, 16 feet.

Price..... $60 00

CHEESE PRESS EXTRAS

"HELMER" GANG

Right Elbow Levers for front end of press	marked "A" 1	$1 50
Left " " " " " " "	" "A" 2	1 50
Right " " " rear " " "	" "B" 1	1 50
Left " " " " " " "	" "B" 2	1 50
Pressure Head with arms	" "L"	2 50
Rod Buckle	" "S"	60
Long Standard	" "M"	1 25
Short "	" "T"	1 00
Round Shaft	" "C"	1 00
Plain Leg	" "O"	1 00
Side Bearing Bracket	" "Z"	75
Bracket Leg (right)	" "J" 1	1 50
" " (left)	" "J" 2	1 50
Square Shaft	" "D"	1 00
Cross Piece for head of press	" "G"	2 00
Rod Buckle	" "P"	30
Pawl for Compounding Lever	" "U"	30
Ratchet Wheel	" "X"	75
Screw with Ratchet Wheel	" "H"	4 00
Pressure Bar or Sliding Cross Piece	" "R"	2 00
Bearing Bracket for round shaft	" "Y"	75
Nut for screw	" "N"	4 00
Cap " "	" "E"	3 50
Rod Bracket or support	" "F"	15
Compounding Lever Head	" "O"	60
¾-in. Draught Rod	" "I"	40
Girt	" "W"	2 00
Lever and Pawl for Screw	" "K"	2 25
½-in. Draught Rod (long, not shown in cut)		80
½-in. Tie Rod, double nutted each end (not in cut)		30
Pressure Pin (not shown in cut)		10

"SPRAGUE" GANG

No. 1, Half of Clamp for Shaft	$0 30	No. 5, Head of Press (51 lbs.)	$4 50
" 2, Clamp for rod	15	" 6, Cap for screw	5 00
" 3, Legs for press (35 lbs.)	3 00	" 7, Eccentric for Shaft	60
" 4, Nut for screw	6 00		

"NEW STYLE STEEL" GANG

	Black	Galvan.		Black	Galvan.
Screw complete	$12 00	$14 00	Rails, each	$8 00	$10 00
Nut separate	3 50	4 00	Top End Cross Piece	1 00	1 20
Screw only	3 50	4 00	Head Block End	2 50	3 00
Lever and Ratchet	2 00	2 50	Trough Cross Piece	75	90
Head for screw	3 50	4 00	Wood Rails and Cross Piece complete	5 00	5 00
Legs for press, each	1 50	1 75	Pins for set	1 00	1 20
Cross bar for legs, each	75	90			

"OLD STYLE WOODEN" Y. A.

Cap	$1 25
Nut	1 75
Lever	75
Screw	2 50
Ratchet	1 00
Pins	15
Screw complete	5 00

"OLD STYLE WOODEN" GANG

Cap	$2 75
Nut	3 25
Lever	1 75
Screw	3 25
Ratchet	1 00
Pins	15
Screw complete	9 25

Prices on Extras for "Old Style Wooden" Combination Press are same as on the single "Y. A." or "Old Style Wooden" Gang Press.

GANG PRESS HOOPS

"FRASER" TINNED

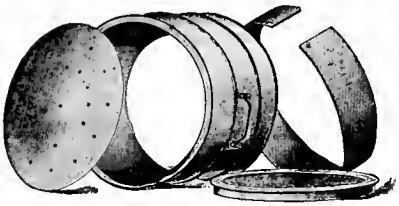
We furnish all kinds of Gang Press Hoops. The latest and best thing in this line is the "Fraser Steel Tinned," which we recommend as being superior to the galvanized iron hoop, in that it is more durable, makes a finer-looking cheese—and the cheese can be taken out of the hoop much more easily.

NOTE—The depth of a cheese hoop is measured from the bottom of the hoop to the bottom of bandager rim.

SIZES AND PRICES

No.	Price	No.	Price
7 x7 or 9	$2 00	14½x 5 or 6	$3 60
10 x5	2 40	14½x 7 or 8	3 90
10 x6 or 7	2 60	14½x 9 or 10	4 40
10 x8 or 9	2 80	14½x11 or 12	4 60
11 x6 or 7	2 85	15 x 5	3 60
11 x8 or 9	3 00	15 x 6 or 7	4 00
12 x5 or 6	3 00	15 x 8	4 40
12 x7 or 8	3 60	15 x 9 or 10	4 60
13½x6 or 7	3 15	15 x11 or 12	5 00
13½x8 or 9	3 90	15½x 6 or 7	4 40
13½x10	4 20	15½x 9 or 10	5 00
14 x5 or 6	3 30	16 x 5 or 6	4 80
14 x7 or 8	3 75	16 x 9 or 10	5 25
14 x9 or 10	4 00		

THE LOOSE BOTTOM HOOP.



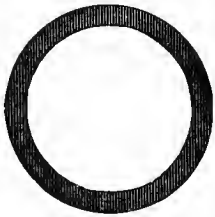
The most convenient hoop to use ever made. They are made whole with no rivets to tear the bandage as the cheese drops out. The loose bottoms makes it possible to remove the cheese after 24 hours hard continuous pressing quite easily. The hoop does not become injured by continuous rappings or running a knife around the cheese with danger of cutting the bandage. No other hoop so strong or convenient.

Prices same as on regular hoops given above.

FIBROUS PRESS RINGS

They are used generally. They can be cut to fit any sized hoop, and give good satisfaction.

From 10 to 16-inch hoop.....each, $0 35
" 7 to 8-inch..... " 25



Fibrous Press Ring

GALVANIZED IRON DIVIDING CIRCLES

For Y. A. Hoops.....each, $0 40

BANDAGERS

For Y. A. Hoops.....each, $0 50
" other sizes..... " 75

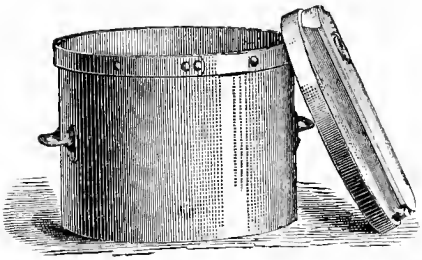
SACKERS

For cheese bandage.....each, $1 75

IN ORDERING SACKERS, NOTE SIZES WANTED

GALVANIZED STEEL CHEESE HOOPS

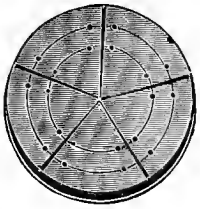
WITH HEAVY HARDWOOD FOLLOWERS FOR STANDING PRESS.



Hoops, 10 in. x 9 in.	$2 00
" 12 in. x 8 in.	2 15
" 13½ in. x 6 or 7 in.	2 25
" 13½ in. x 8 or 9 in.	2 50
" 13½ in. x 10 or 12 in.	2 75
" 14½ in. x 10 or 12 in.	2 80
" 14½ in. x 8 in.	2 50
" 15 in. x 10 or 12 in.	2 85
" 15½ in. x 10 or 12 in.	2 90
Young America, 7 x 9 in.	2 00

FOLLOWERS.

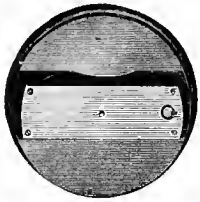
FRAZER.



PRICES.

Y. A. each,	$0 45
Other sizes "	55

HARD WOOD.



PRICES.

10 to 12 inch each,	$0 70
13 to 16 inch "	0 80

FUNNELS FOR FILLING Y. A. HOOPS

Price, each.....$1 00

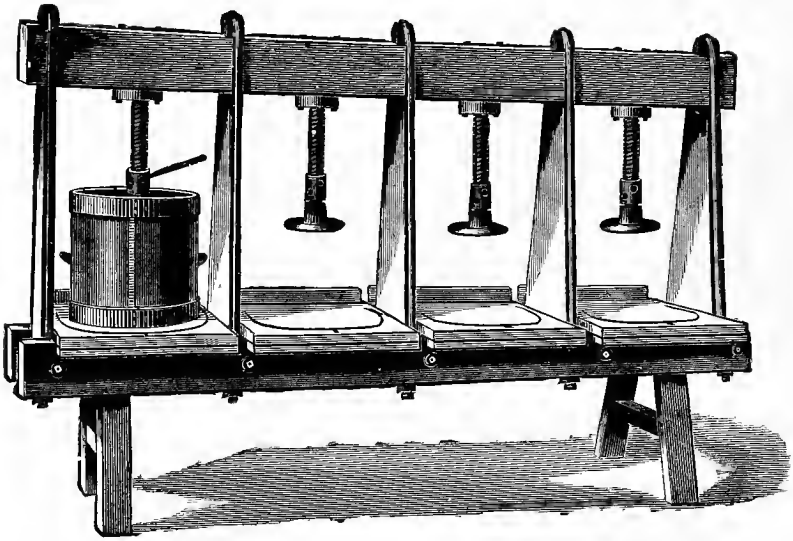
"SPEED" KNIVES

COCOA HANDLES

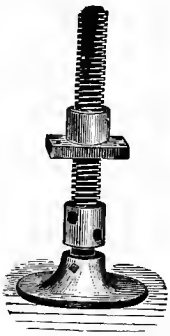
Just the thing to use in removing cheese from the hoops. By running it between the cheese and hoop it will separate them, leaving the cheese in good condition. Also used in taking cheese from shelves.

Length of Blade..	6 in.	7 in.	8 in.	9 in.	10 in.	11 in.	12 in.	14 in.
Price, each.....	$0 50	$0 60	$0 70	$0 80	$0 95	$1 20	$1 45	$1 70

STANDING CHEESE PRESS.



PRESS SCREW



The bottom sills of this press are made of 6x8, and the top piece of 6x8.

The rods pass up one side and over the iron saddles shown on the top of the press, and down on the other. Holes are bored through the top timber to allow the screw to pass up through when raised to allow the removal of the hoops. The divisions between the hoops are made of two-inch plank, and support the timber. This press can be made any desired length to hold any number of cheeses.

PRICE

1 Screw	$22 50	4 Screws	$45 00
2 "	27 00	6 "	60 00
3 "	37 50	8 "	75 00

Press screw, 1¾x20 inches high, each.....$2 75

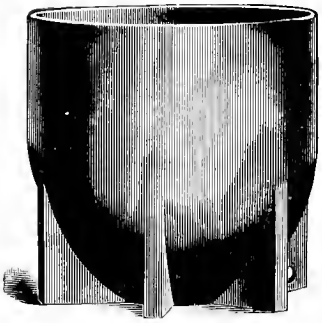
RODS.

SADDLES.

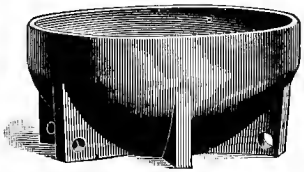
Rods, saddles and washers, per set.....$1 50

SPECIAL CHEESE MOLDS

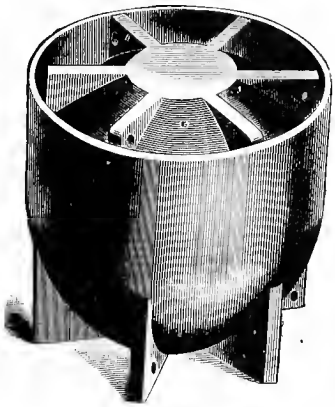
EDAM CHEESE MOLDS



Edam Mold.



Mold Top

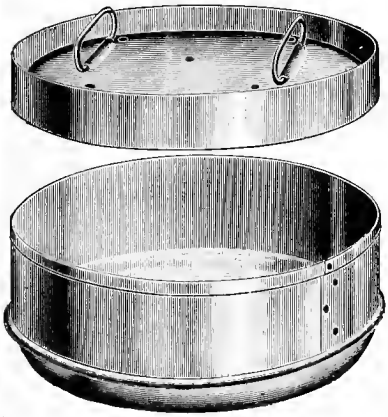


At Press

Considerable difficulty has been found in obtaining satisfactory wood for the Edam Cheese Molds. We have had such poor success in this direction that we determined to try a substitute in galvanized cast iron molds. The illustration showing the mold in several positions conveys fully the idea of the advantages of the iron mold. The lower half is made of sufficient depth so that when it is filled with curd, the other half of the mold, or top, will telescope it sufficiently to make the Edam Cheese round.

The price which we have put upon these molds make them cheaper than any wooden mold that has been sold. They will last a life-time. They can be re-galvanized should the galvanizing wear off.

Our price is $3.50 each.



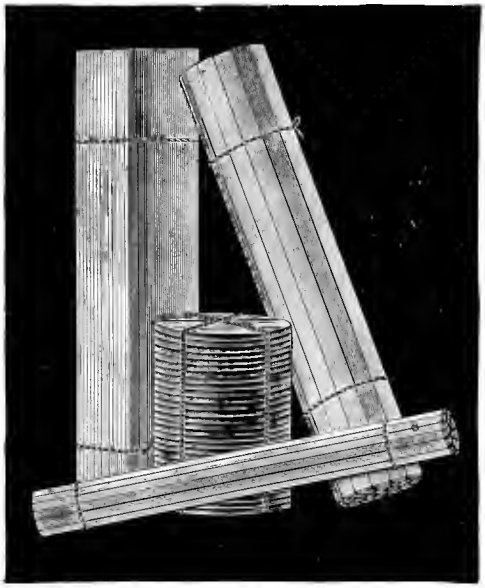
GOUDA CHEESE MOLD

A new fancy cheese is being marketed in some localities in oval form about nine or ten inches in diameter. We have provided a mold, as shown in the illustration; oval top and bottom, the top telescoping into the mold itself.

Price, each $3 00

CHEESE BOXES

Our Hoops and Rims are **rotary cut. Smooth** and make a **first-class box.**
Made up or knock down. We **make a specialty** of car-load business.



This cut represents material for 50 complete boxes.
Average weight of same, 250 pounds.

PRICES

K.D stock complete for boxes 14½ inches or less diameter.

From Elgin—
5 inch deep.....$.....
6 " " ....
7 " " ....
8 " " ....
9 " " ....
10 " " ....
11 " " ....
12 " " ....

From Mills in Michigan—
5 inch deep.....$.....
6 " " ....
7 " " ....
8 " " ....
9 " " ....
10 " " ....
11 " " ....
12 " " ....

We can ship cheese boxes from Elgin, Ills., Mankato, Minn. and **Kansas City, Mo.**

MADE UP.

Jokers, 10 to 11x6 to 8 in.....each, $....
Favorites, 12x6 to 8 in..... " ....
Cheddars, 13 to 16x8 to 12 in..... " ....
Flats, 13 to 16x4 to 7 in..... " ....
YA's, 17x17 to 8 in..... " ....
200 lots, less per box .. f.o.b., Elgin, Ill.

SCALE BOARDS

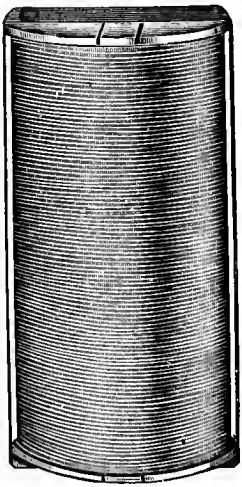
FOR AMERICAN CHEESE

Our scale boards are made from the very best white wood. Boards are perfect and bundles run full count. Furnished in the following sizes:

11-inch, about 1,600 to bundle, per bundle..... $....
13 " " " " " ....
14 " " " " " ....
15 " " " " " ....
16 " " " " " ....

FOR SWISS CHEESE

26-inch, about 1,500 to bundle, per bundle..... $....
28 " " " " " ....
30 " " " " " ....



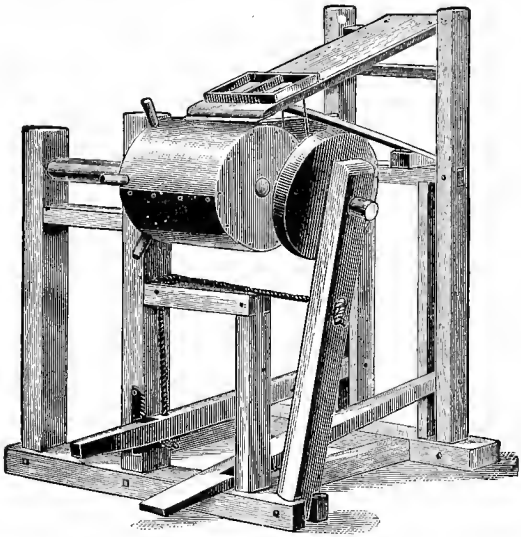
We furnish special sizes of round and square scale boards.

See Monthly Price List for Prices.

CHEESE BOX MACHINES.

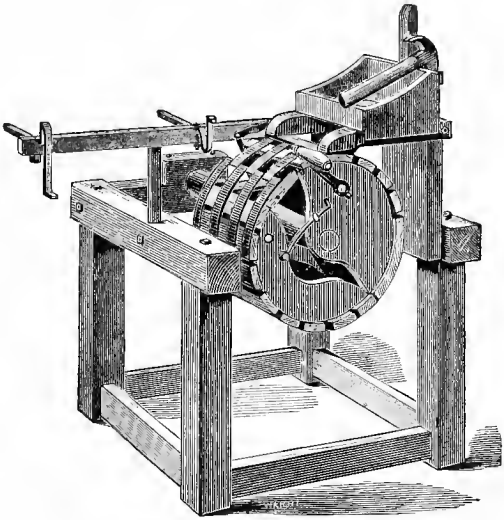
ROE PATTERN.

This cut represents a very convenient form of cheese box machine. It is used by large box manufacturers, and has ample capacity for any factory



Price, each..... $20 00

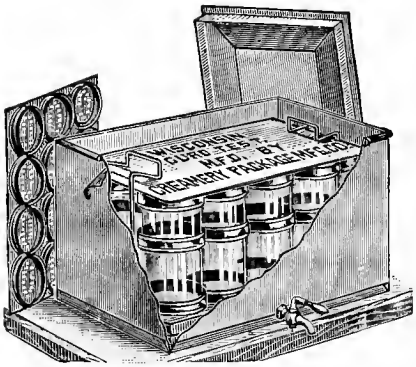
HARRIS PATTERN.



SIZES AND PRICES.

With 1 drum to make 2 sizes..... $28 00
2 drums " 5 " 38 00

WISCONSIN CURD TEST



Cheese-makers are often troubled with gassy or floating curd, which makes defective cheese, creamerymen and milk dealers are perplexed with tainted milk without means of finding the source of the trouble. These faults come from some particular lot of milk which contains impurities. The Wisconsin Curd Test detects these defects and enables the cheese-maker, creameryman or milk dealer to trace the fault to the dairy, and the very cow which causes the trouble.

HOW TO MAKE THE TEST

Thoroughly cleanse the jars with live steam or scalding water. Take the rack of jars to the taking-in room; take a sample of milk from the patron, numbering the jar to correspond with the patron's number on the milk sheet, fill the jar about two-thirds full, continue until all the jars in the rack contain a sample. Put on the tight covers and put the rack in the vat. Fill vat with water as high as the milk in bottles, set an oil stove under the vat and heat the water in the vat to 100 degrees F. Take out the rack with jars and shake occasionally. When the milk reaches 98 degrees F. add 10 drops of rennet extract to each jar, shake the rack with a rolling motion, and after the milk curdles let it stand about 20 minutes, or until firm, then cut the curd fine with a thin knife, rinsing the knife thoroughly for each jar. When the curd settles, take the perforated covers and put them on top of the jars, then turn the rack bottom side up and shake gently until all the whey has run off. Let it stand a few minutes in the vat and then repeat the operation until all the whey is drained off. The more completely the whey is drawn off the better the test. Put tight covers on jars and return to vat. Now regulate the wick of the oil stove to hold the temperature at 98 degrees F.

Let the bottles stand from 6 to 12 hours, then open the jars, drain off what whey remains and cut the curd in two pieces; take them from the jar, and those curds having a spongy texture, or bad odor, can be detected by smell, thus showing which patron is furnishing the bad milk. Now take the rack of jars to the patron's barn and take a sample of milk from each of the cows and test them the same as above; this will locate the identical cow that is causing the trouble.

PRICES

One Dozen Bottle Test, without table	$12 00
Two " " " " "	15 00

EXTRAS FOR WISCONSIN CURD TEST

Bottles, per dozen	$1 00
Vat for 2 dozen bottles	3 00
Vat for 1 dozen bottles	2 50
Bottle strainer for 2 dozen	2 00
Bottle strainer for 1 dozen	1 75
Cover for 2 dozen bottles	1 50
Cover for 1 dozen bottles	1 25
Bottle Frame or Support for 2 dozen	3 00
Bottle Frame or Support for 1 dozen	2 50
Faucets, each	25

THE MARSCHALL RENNET TEST

SIMPLE RELIABLE

INDISPENSABLE TO EVERY CHEESEMAKER

The Marschall Rennet Test is not intended for use by the chemist in the laboratory, but for the practical cheesemaker, enabling him, in a simple, practical way, to ascertain the condition of his milk, and as a guide for the manipulation of the milk and the curd in the vat.

What the cheesemaker needs is not so much an exact chemical determination, as it is a *guide*, showing him the comparative condition of his milk, its variations from one day to another, so that he can regulate matters and arrange the manipulations of the milk and the curd, with the view of making a uniform product.

DIRECTIONS

As soon as the milk in the cheese vat is heated to the proper temperature, usually 86°, measure off with the pipette (**b**) one cubic centimeter of Rennet Extract, filling the pipette to the mark on the stem, and empty it into the little glass (**c**) previously about half filled (to the mark) with pure, cold water, free from lime or alkali (boiled water or condensed steam, cooled to ordinary temperature, is the best). Rinse the pipette by drawing water into it from the glass (**c**), and let the rinsings run back into the glass. Mix well by shaking the glass.

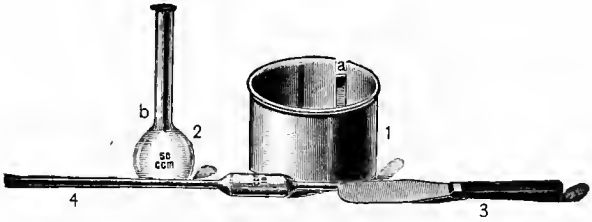
See to it that the little outlet tube in the bottom of the cup (**a**) is clean and free from obstructions. Stir the milk in the cheese vat and fill the cup (**a**), by dipping it down in the milk. Place it on a level board so that the milk will run out through the outlet in the bottom. Take the glass of diluted Rennet Extract in one hand and the spattle (**d**) in the other. Watch the level of the milk in the cup, and the moment it drops to the (**o**) mark, pour in the diluted Rennet Extract and stir it in well. Then leave it alone.

When the milk stops running, read off on the graduated scale how much milk has run out.

Price, complete.....$2 50

Send for Circular containing complete description

MONRAD'S RENNET TEST.



Take a 5 c. c. pipette (Fig. 4) and fill into a 50 c. c. measuring bottle (Fig. 2), which has previously been two-thirds filled with water. Rinse the pipette by filling it and emptying it two or three times from the mixture and then fill water in the measuring bottle to the mark (*b*) on the neck (with the pipette). Shake the bottle well and then use 5 c. c. of this diluted rennet extract to 160 c. c. milk. The tin cup with a mark (one of which [*a*] is shown) on each side, indicating the 160 c. c. To keep an even temperature, use the tin cup (Fig. 1), loaded under the bottom with solder, so as to float it in the milk vat. This test is calculated to take 120 seconds for commencing coagulation, as against 60 in the other, and thus is another element of certainty introduced. A suitable knife or spatula (Fig. 3) is necessary to stir the rennet in with (which should be done quickly and not last more than five or six seconds), as well as wherewith to observe the workings of the milk. This insures five times as exact a test at the expense of two minutes extra work. The diluted rennet should not be used after it has been standing for more than fifteen minutes; a new one should be prepared.

Price complete.....$1 00

EXTRAS.

Graduated cup	each,	$0 60
5 c. c. pipette	"	25
50 " graduated flask	"	75
Spatula	"	25

RENNET EXTRACT.

The rennet extract may be used with full as well as skimmed milk. Heat the milk to the degree at which it is to curdle. If cheese coloring is to be used, first put that into the milk and mix well by careful stirring. Next, in the measuring glass, measure the rennet extract, quantity calculated according to table annexed, and mix it in a little water—say, one gallon of water to every pint of extract. This secures a more even action of the rennet throughout the mass of milk than could be secured if it is added in the concentrated form. Then pour the mixture into the milk, stir vigorously, not only while adding the extract, but also for two or three minutes after; then leave the milk alone until it is ready for cutting.

TABLE.

The quantity of rennet required for a certain quantity of milk depends upon the degree of the heat of the milk, and upon the time desired for coagulating it.

One thousand pounds of milk require for curdling from twenty-five to forty-five minutes—

At a temperature of	95	degrees	Fahrenheit,	from	1 oz. 5 dr.	to	2 oz. 4 dr.
" "	88½	"	"	"	2 oz. 0 dr.	to	3 oz. 3 dr.
" "	52	"	"	"	2 oz. 4 dr.	to	4 oz. 2 dr.

One pint will coagulate from 3,000 to 8,000 pounds of milk, according to heat and time, as stated above. Diseased milk generally curdles much more quickly, but sometimes it fails altogether.

SUGGESTIONS TO THE MANUFACTURER OF FULL CREAM FANCY CHEESE.

After weighing, the milk should be put into the vats and cooled to sixty-five or seventy degrees, stirring it occasionally, so as to allow the animal odors to escape. Fill the vats only partly full with the night's milk, so as to leave room for the morning's milk. Do not cool the night's milk any more than is necessary to keep it from souring. It is better that it should vaporize—"give off" from itself, so to speak—than to cool it so much that the surrounding air condenses upon its surface, thereby precipitating into it any impure odors that may be in the room.

SECOND.—Mix the morning's milk when it is received, as indicated, in the vats with the night's milk.

THIRD.—Turn on the steam from the boiler and heat the water in the space between the tin and the wooden vats, so that the milk in the tin vats shall run up to eighty-five degrees, gently stirring the milk in the meantime, and add the Annattoine coloring, as per directions, and mix in thoroughly.

FOURTH.—Add one pint of the Danish rennet extract to each 3,000 or 5,000 pounds of milk, according to the season, so that coagulation will take place in twenty to thirty minutes, when the curd will be ready to cut.

FIFTH.—Cut the curd with both the perpendicular and horizontal curd knives. After allowing to stand for a few minutes, turn on the steam and heat the water under the cheese vat so that the temperature of the milk and curd shall gradually run up to ninety-five or ninety-eight degrees Fahrenheit, depending upon the season, continuously stirring the whey and curd so as to thoroughly cook every particle of the cheese curd. It is important to stir gently, so as not to start the white whey.

RENNET EXTRACT

CHR. HANSEN'S DANISH RENNET EXTRACT

During the past season some cheese makers, led astray by tempting offers of cheap extracts, have had a sad and costly experience with claims for allowance on cheese which were rotten or off flavor before reaching the consumers. These makers, wiser, if poorer, are now falling back on the

Old Reliable

CHR. HANSEN'S DANISH RENNET EXTRACT

Which never fails and always does what is claimed for it.

As to purity it stands unequaled, and considering its curdling power, it is by far the cheapest in the market.

PRICES

Barrels of about 45 gallons	per gallon, $	....
Half-barrels of 20 or 24 gallons	"	....
Ten-gallon kegs	"	....
Five-gallon kegs	"	....
Cases of 12 or 6 one-gallon bottles or jugs	"	....
Single gallon		....

CHR. HANSEN'S RENNET TABLETS

FOR CHEESE MAKING ON THE FARM

For cheese making on the farm these Tablets are indispensable.

Their Curdling Power is Astonishing

One No. 1 Tablet is sufficient for 500 lbs. of milk, and one No. 2 Tablet for 100 lbs. Handy to send by mail. Put up in 4 styles of packages, at the following prices:

1 can, 100 No. 1 Tablets (postage 12c extra) $....	1 box, 50 No. 2 Tablets, by mail, prepaid ... $....
1 " 200 " 2 " " 6c "	1 " 24 " 2 " " " ... .

Eight cents extra for registration of mail packages.

RENNETINE
"BLUMENTHAL'S"

1 lb. by mail, postage paid.....$..... 10 lbs. by express.....per lb., $.....
5 lbs. by express.....per lb., ... 25 lbs., and upwards.....per lb., ...

RENNETS
BEST "BAVARIAN"

We import our own rennets, and can recommend them as being a first-class rennet.
In small lots.....each, $..... In 100 lots.....each, $.....
In 500 lots.....each, $.....

CHEESE COLORING

DRY—Annattoine

PRICE

In small lots.....per lb., $..... 12½ and 25-lb. boxes.....per lb., $.....

ANNATO SEED—Best Quality. **CURCUMA**

Per lb., small quantities.....$..... Per lb.....$.....
25 to 50 lbs. lots.....per lb. ..... In 25-lb. lots .....

"BABBITT'S" POTASH

Per lb., cans.....$..... Cases of 24 1-lb. cans.....per can, $.....

See Monthly Price Current for Prices.

CHEESE COLOR

CHR. HANSEN'S DANISH CHEESE COLOR

Now universally used for all first-class cheese, inferior preparations having given such poor satisfaction and so much trouble, that intelligent cheese makers have come to the conclusion that Chr. Hansen's is the

Only Reliable Cheese Color

The Cheese Merchants all advise the makers to use no other

Produces a Rich, Creamy, Non-Fading, Uniform Color.

PRICES

Five-gallon jugs, per gallon..... $..
Cases of 12 or 6 one-gallon bottles or jugs, per gallon..... ...
Single gallon..... ....
4-oz. bottle..... ....
4-oz. bottle, by mail..... ....

For Prices see our Monthly Price Current

CHR. HANSEN'S CHEESE COLOR TABLETS

The most concentrated, the purest and the handiest cheese color for farm cheese making.

Should be used by all who are using Chr. Hansen's Rennet Tablets

12 Tablets equal in coloring power to 4 oz. of Chr. Hansen's Liquid Cheese Color.
Put up in vials holding 12 tablets each. Sent by mail at 30 cts. a vial.
Box of 12 Vials.....$3 00
Postage, extra, 12c. Registration, extra, 8c.

CHR. HANSEN'S COCO-RENNET

A Palatable Digestive Tablet, that immediately relieves the distress so often felt after a hearty meal.

One or two of the Tablets allowed to dissolve in the mouth after each meal will remove the distress caused by over-eating or indigestion, and will prove very beneficial in all forms of stomach trouble caused by poor digestion. Many cases of nervousness and insomnia are directly traceable to the stomach, and Coco-Rennet has proved quite effective in such troubles.

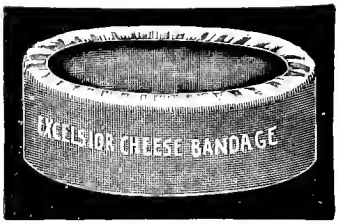
The Coco-Rennet Tablets are put up in packages retailing at 10 cents each.

For sale by druggists

Under no circumstances will we be responsible for delivery by mail unless 8 cents extra are sent for registration.

In ordering please write your name and address plainly

CHEESE BANDAGE



"EXCELSIOR"

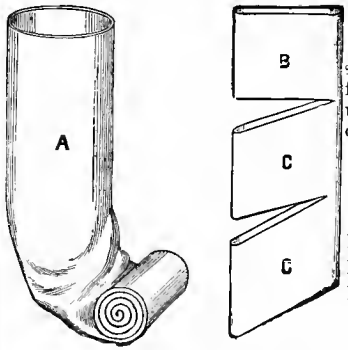
The Best—The Neatest—The Cheapest

The large increase in our trade for "Excelsior" Bandages is the very best testimonial that could be given for them. They are being exclusively used by many of the largest Cheese Manufacturers in the country, and are giving the very best of satisfaction. They are carefully made from a fine grade of soft cloth and make a finer appearing cheese than any other style of bandage. The warp of cloth which we use in making these bandages runs straight both ways. There is no danger of cracking as is the case with other bandages. We make them both taper and straight seam. The taper seam bandage is for the Fraser style Hoop, and the straight seam for the old style galvanized iron hoop. In using the "Excelsior" bandages, there is no loss in cutting. Every bandage paid for will cover a cheese. The cloth is one-half heavier than that in any other style of bandage. These two items taken into account, make it the cheapest bandage.

STOCK SIZES AND PRICES—Either Taper or Straight Seam.

	Per M.		Per M.		Per M.
7 x 5	$ 6 00	12 x 8½	$15 00	14 x 13	$24 50
7 x 8½	9 00	12 x 9	15 50	14 x 14	25 50
7 x 9	9 50	13 x 6	11 50	14½ x 7	14 00
7 x 9½	10 00	13 x 6½	12 00	14½ x 7½	14 50
7 x 10	10 50	13 x 7	13 00	14½ x 8	15 00
8 x 8	11 50	13½ x 5	11 00	14½ x 8½	15 50
10 x 6	10 00	13½ x 5½	11 00	14½ x 9	16 00
10 x 8	14 00	13½ x 6	12 00	14½ x 10	18 00
19 x 10	15 50	13½ x 7	13 50	14½ x 12	22 50
10½ x 6	10 00	13½ x 7½	14 00	14½ x 13	25 00
10½ x 7½	11 00	13 x 9	16 00	14½ x 14	26 00
11 x 7	12 50	13½ x 13	24 50	14½ x 15	27 00
11 x 8	13 00	14 x 5½	12 50	15 x 7½	16 00
11 x 8½	14 50	14 x 6	12 50	15 x 9	17 00
11¼ x 7	13 00	14 x 7	13 50	15 x 13	26 00
11¼ x 8	14 00	14 x 7½	14 00	15 x 14	27 00
12 x 6	11 00	14 x 8	14 50	15 x 16	29 00
12 x 7	13 00	14 x 8½	15 00	5½ x 13	12 00
12 x 8	13 50	14 x 9	16 00	5½ x 14	12 50
				5½ x 15	13 00

Other sizes furnished at proportionate prices. When ordering, state for what size of hoop the bandages are wanted.



SEAMLESS

"READY MADE"

We furnish "Ready Made" Bandages in the same size as the "Excelsior". These bandages are made from bleached cloth, in the same weight as the regular cheese cloth, and much coarser than the grade of cloth used in "Excelsior" Bandages.

"SEAMLESS"

7-inch	per yard,	$....
10, 11 and 12-inch	"	....
13½-inch	"	....
14, 14½ and 15-inch	"	....
15½ and 16-inch	"	....

See Monthly Price List for Prices

"DE HAVEN" CHEESE BOX FASTENERS

Best on the market; a perfect "Hold Fast"

PRICES

Per lb.....$.... 25-lb. boxes.....$....

CLOTH

Our Cloth is the heaviest and the best grade of goods used for this purpose. We furnish it both bleached and unbleached.

AMERICAN CHEESE

28-inch bleached bandage cloth.....per yd., $.....	26-inch unbleached bandage cloth..per yd., $....
36 " " " " ..... "	28 " " " " " ....
42 " " " " ..... "	36 " " " " " ....
45 " " " " ..... "	46 " " " " " ....

SWISS CHEESE

Nos.....	15	14	13	12	11	10	9	8	7
	$1.85	$1.70	$1 55	$1.40	$1.25	$1.05	$0.90	$0.75	$0.60

BUTTER

36-inch, "A and S," extra quality.....per yd., $.....

STRAINER

76-inch, linen.....per yard, $.....

PRESS

48-inch.....per yard, $.....

CHEESE BOX AND SHELF SCRAPER

2½-inch cutter.....each, $0 50

CHEESE GREASE

JOHNSON'S FLY PROOF.

Johnson's Fly Proof Cheese Dressing has been in the market for thirty-six years and has given universal satisfaction. It is made of the very best material obtainable, regardless of cost. The dressing is not absorbed by the cheese, therefore only half as much is required as of other so called dressing which is made of poor butter and grease. Johnson's dressing does not turn rancid, and if used according to directions is absolutely fly proof. A trial will convince any cheese maker of its superiority.

Price, per pail, $..... In tubs and barrels, per lb., $.....

For Prices not given see Monthly Price Current

SWISS CHEESE KETTLES

"GOLDEN STAR"

SCHWEITZER

...STEAM CHEESE KETTLE...

HAND PLANISHED

The Cleanest, Cheapest and only Perfect System guaranteeing an absolute first-class Cheese.

No Smoke, No Dirt. Simple, Everlasting

SIZES AND PRICES

100-gallon	each, $200 00	275-gallon	each, $400 00
125 "	" 225 00	300 "	" 450 00
150 "	" 250 00	325 "	" 500 00
175 "	" 275 00	350 "	" 550 00
200 "	" 300 00	375 "	" 600 00
225 "	" 325 00	400 "	" 650 00
250 "	" 350 00	450 "	" 750 00

500-gallon ..... each, $850 00

"GOLDEN STAR"

SCHWEITZER

FIRE CHEESE KETTLE

HAND PLANISHED, SUPERIOR FINISH

CORRECT AND ORIGINAL SHAPE

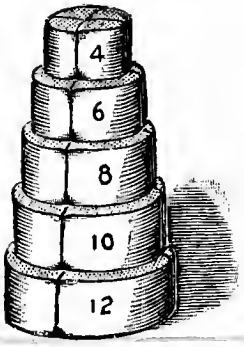
SIZES AND PRICES ON APPLICATION

All Kettles Crated. If otherwise Ordered, we do not Insure Good Delivery.

CRATING AND CARTAGE, ON ALL KETTLES, $3.50 NET.

SWISS CHEESE UTENSILS

Curd Breakers, 3 wire	each, $2 00	Wood Milk Skimmer	each, $3 00 to $ 5 00
" " 4 wire	" 2 50	Tin " "	each, 2 00
Press Hoops, 4 inch to 5½ inch	" 2 50	Drying Boards, 1 in. x 32 in. to 34 in.	" 1 20
" " 6 " 6½ "	" 3 00	Press Tables, 8 ft. x 3½ ft.	" 8 00
" " 6¾ " 7 "	" 3 50	Press Boards or followers, 2 x 36 in.	" 10 00
Salt Hoops, any size	" 1 80	" " " 2x32 to 34 in.	" 10 50
Steel Bows, 6 and 7 foot	" 1 30	Wood Case Thermometers, V shape,	doz. 22 00
Long Handle Salt Brush	" 2 00	Tin " " "	" 20 00
Scale Boards, 24-inch, per bundle, about 1,500			" 6 25
" " 26 " " " " 1,500			" 6 75
" " 28 " " " " 1,500			" 7 00
" " 30 " " " " 1,500			" 7 25



SWISS CHEESE BOXES

FURNISHED EITHER ROUND OR SQUARE

26 inch x 28 inch...each, $.... 30 inch x 32 inch or 34 inch...each, $....

PRICES ON APPLICATION

PRESS CLOTH CIRCLES

These Circles are very handy. Save time and patience. Cheaper than to make them.

SIZES AND PRICES

7- inch	per M., $10 00	13- inch	per M., $19 00
7½ "	" " 11 00	14 "	" " 20 00
8 "	" " 12 00	14½ "	" " 21 00
12 "	" " 17 00	15 "	" " 22 00
12½ "	" " 18 00	16 "	" " 24 00

18-inch ..... per M., $32 00

Other sizes furnished at proportionate prices.

SCALES.

Howe or Fairbanks.

WITH SINGLE BEAM AND WHEELS.

Capacity.....400 lbs.	Platform..... 15 x 24	Price, $26 00
" .....600 lbs.	" .....16 x 24	" 33 00

Same, without wheels, $3 00 less.

WITH DOUBLE BEAM.

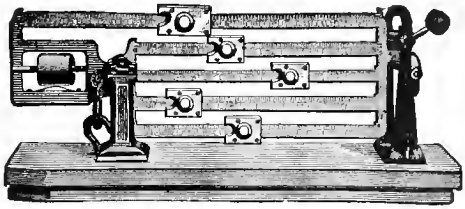
WITH WHEELS.

Capacity, 400 lbs.;	Platform, 15x22;	Price, $30 00
" 600 lbs.;	" 16x24;	" 37 00
" 1000 lbs.;	" 17x26;	" 47 00

WITHOUT WHEELS.

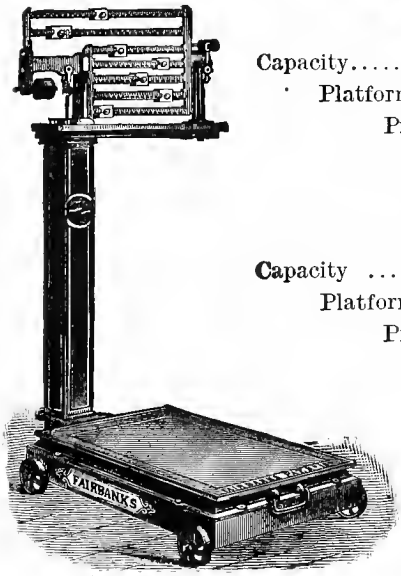
Capacity..... 400 lbs.	Platform.....15 x 22	Price $27 00
" ..... 600 lbs.	" ..... 16 x 24	" 34 00
" ....1000 lbs.	" ....17 x 26	" 43 00

FIVE BEAM SCALE.



WITHOUT WHEELS.

Capacity.....600 lbs.
Platform .....16 x 25.
Price.....$47.00.



WITH WHEELS.

Capacity..... 600 lbs.
Platform ....16 x 25.
Price .....$50.00.

SEVEN BEAM SCALE.

WITHOUT WHEELS.

Capacity .... 1000 lbs.
Platform ....17 x 26.
Price .....$56.00.

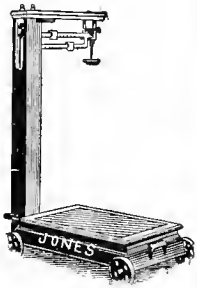
WITH WHEELS.

Capacity ..... 1000 lbs.
Platform .....17 x 26.
Price.....$60.00.

SCALES.

JONES' DAIRYMAN'S SCALE.

WITH DOUBLE BEAM AND WITHOUT WHEELS.



Capacity ¼ to 400 lbs.,	platform	15 x 21	$27 00
" ¼ to 600 "	"	16 x 22	34 00
" ¼ to 800 "	"	17 x 26	43 00

WITH WHEELS.

Capacity ¼ to 400 lbs.,	platform	15 x 21	30 00
" ¼ to 600 "	"	16 x 22	37 00
" ¼ to 800 "	"	17 x 26	47 00

CHEESE FACTORY SCALE.

WITH FIVE BEAMS AND SLIDING POISES, WITHOUT WHEELS.

Capacity ¼ to 600 lbs., platform 16 x 25 ..... $47 00

WITH WHEELS.

Capacity ¼ to 600 lbs., platform 16 x 25 ..... 50 00

WITH SEVEN BEAMS AND SLIDING POISES, WITHOUT WHEELS.

Capacity ¼ to 1000 lbs., platform 17 x 26 ..... $56 00

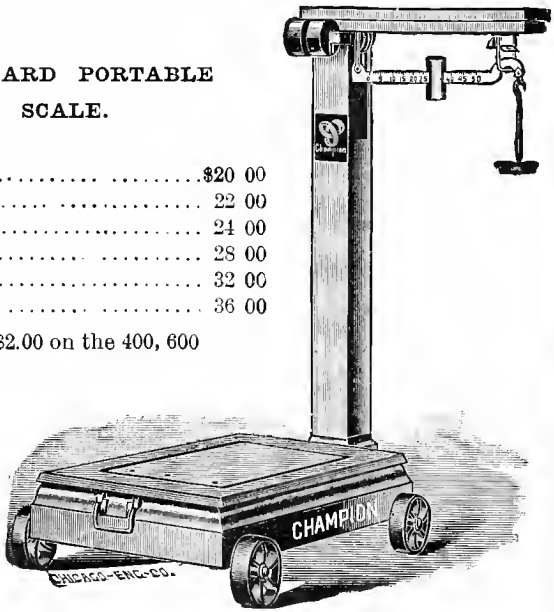
WITH WHEELS.

Capacity ¼ to 1000 lbs., platform 17 x 26 ..... 60 00

CHAMPION STANDARD PORTABLE PLATFORM SCALE.

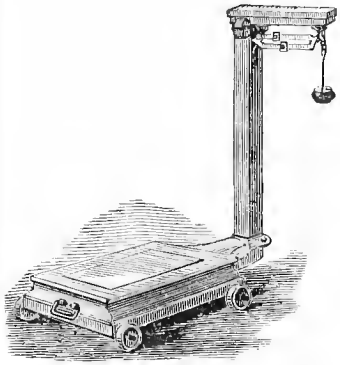
Capacity 400 lbs.		$20 00
" 600 "		22 00
" 800 "		24 00
" 1,000 "		28 00
" 1,200 "		32 00
" 1,500 "		36 00

Double beam, extra net, $2.00 on the 400, 600 and 800 pound sizes.



SCALES

"IDEAL" CREAMERY



Our "Ideal" Scales are made expressly for us and are a high-grade scale at a moderate price. We have sold them to the trade for several years with excellent satisfaction. If you are in the market for a scale it will pay you to investigate the merits of the "Ideal."

We send to responsible parties on approval.

PRICE

With single 100-lb. beam and sliding poise, with wheels.

Capacity 600 lbs., platform 16x24 in.....$33 00
" 400 " " 15x22 " 26 00

With double beam, with wheels.

Capacity, 1,000 lbs., platform 17x26 in..... .....$47 00
" 600 " " 16x24 " 37 00
" 400 " " 15x22 " 30 00

FOLDING CREAMERY SCALES

Capacity:
110 pounds on lower beam. 110 ounces on upper beam.

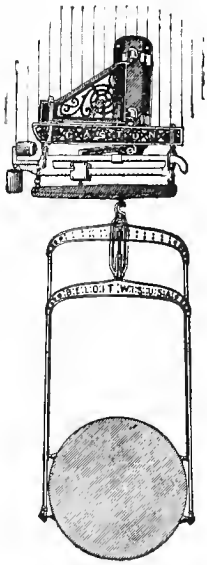
This scale when not in use can be folded perfectly flat against the wall entirely out of the way.

When hung for use the platform sets upon the floor, the load is put on, and then by throwing up the cam at lower end of base plate, the whole scale with load is raised free from the floor, the weight taken, then by turning the cam down the load is placed solid upon the floor again.

For salting butter this scale has no equal. The lower brass beam is graduated in pounds, and the upper brass beam is graduated in ounces. There is a counter balance on back of beam to balance the tub. Place the tub upon the scale and weigh the unsalted butter. Then slide the ounce poise out even with the lower poise and add on salt until the scale balances. The scale does its own figuring as the ounces need not be computed.

The platform and hangers are galvanized so as not to be injured by coming into contact with salt.

The scale is entirely out of the way when not in use.



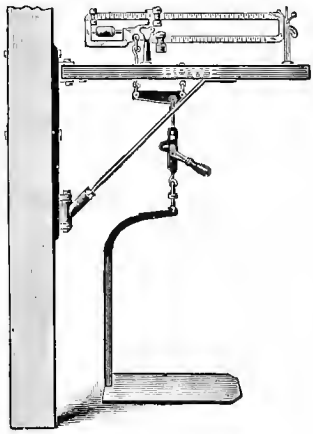
PRICE

2-oz. to 110 lbs..... .....$23 00

Family size, $4 00

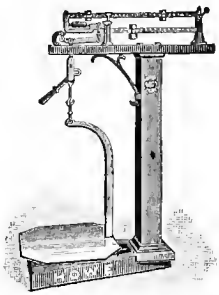
SCALES

"SWINGING" CREAMERY



Top beam, 100 lbs. by ½ oz.
Lower beam, 15 " " 1 "
Price.....$26 00

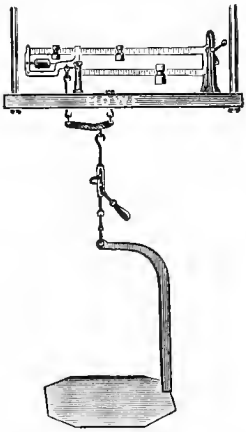
"PORTABLE" CREAMERY



PRICE
With or without Wheels

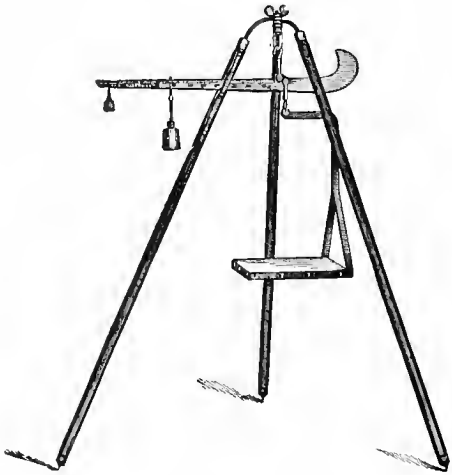
100-lb.,	without wheels.....	$26 00
100 "	with wheels.....	30 00
200 "	without wheels.....	28 00
200 "	with wheels.....	32 00

"SUSPENSION" CREAMERY



Top beam 100 lbs. by ½ oz.
Lower beam 15 " " 1 "
Price.....$20 00

"PORTABLE" CHEESE

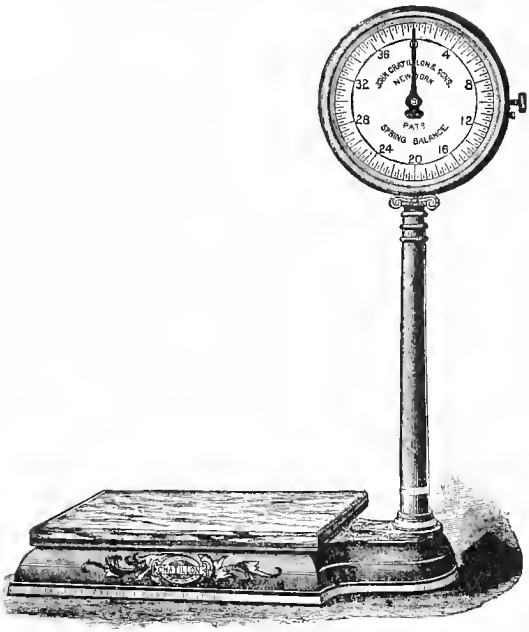


Price $35 00

SCALES.

CHATILLON CREAMERY.

With High Column, Double Dials.



SMALL DIAL—6 INCH. WITH IRON PLATFORMS OR MARBLE SLABS.

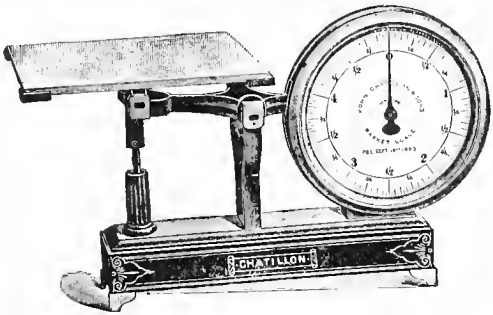
32 lbs.	by 1 oz.	each,	$18 00
64 "	by 2 "	"	20 00
128 "	by 4 "	"	22 00

LARGE DIALS, 8 INCH.

50 lbs.	by 2 oz.	each,	$22 00
100 "	by 4 "	"	24 00

CHATILLON EVEN BALANCE.

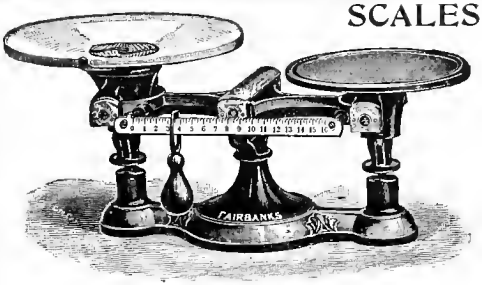
With Agate Bearings.



WITH LARGE DOUBLE DIALS AND MARBLE SLABS.

5 lbs.	by ½ oz., 8 inch dials, 10 inch slabs	each,	$20 00
10 "	by 1 " " " " "	"	20 00
20 "	by 2 " " " " "	"	20 00
40 "	by 4 " " " " "	"	20 00

SCALES



New No. 826 A

BUTTER PRINT

Fairbank's "Agate" Butter trip cannot rust or corrode. First galvanized, then painted red. With brass tare beam and without scoop.

New No.	Capacity.	Price.
825 A	25 lbs. to ¼ oz.	$18 50
826 A	15 " ¼ "	12 50
827 A	6 " ¼ "	11 00

Price incrudes Galvanized Iron Weights, Six Agate Bearings. Large Round Concrete Porcelain Plate and Iron Plate. Extremely Sensitive. Above Prices NET, no Discount.

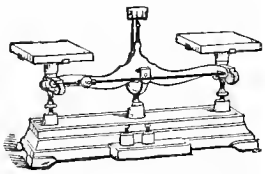
FAIRBANK'S "COMMON" BUTTER TRIP

Steel Bearings, furnished in bright red color, not galvanized.

WITH BRASS TARE BEAM AND WITHOUT SCOOP

New No.	Capacity	Diameter of Porcelain Plate	Prices with Iron Weights
825	16 lbs. to ¼ oz.	12 inches	$14 25
826	10 " " ¼ "	10 "	11 00
827	6 " " ¼ "	8 "	8 75
828	2 " " ¼ "	6 "	7 00

TROMNER BABCOCK CREAM SCALE.



This sale is espcecially designed for very accurate weighing of cream. It is made rust-proof, all bearings being made of agate and the weighing plates of porcelain. It has a side bar in front to balance the bottle, and is provided with the necessary weights. Base of scales is 10½ inches long, the porcelain plates are 3 inches square.

Directions for use: Put the cream bottle on the scale plate and slide the poise on bar until scales balance; then proceed in the ordinary way when making the Babcock test.

The scale is quickly balanced by shoving to the right or to the left the little brass flag found at the base of the pointer.

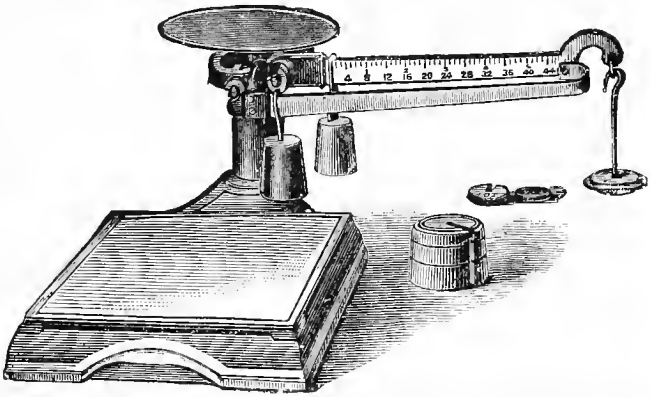
All bearings are agate, plates are porcelain, base and under connections are galvanized, making a rust-proof scale.

Price $10 00

BUTTER SALTING

"ROBERTS" OR "RENNSELAER"

STEEL BEARINGS—FOR THE UNIFORM SALTING OF BUTTER



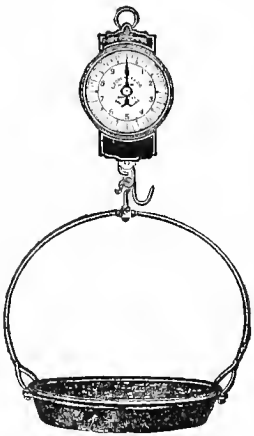
Dairymen are among the most intelligent farmers, and will appreciate a scale of this description, which can be used so readily by any one, and be the means of adding from 5 to 20 cents a pound to their productions.

The only thing is to know how much salt to add to a pound of butter, and a child can always salt butter alike.

Neatly japanned..... $6 00

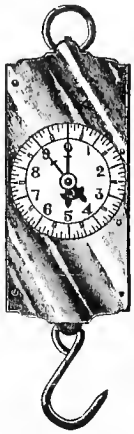
SCALES.

SPRING BALANCE.



With Agate Pan, Tinned Iron Bow and Swivel.
No. 0126, Medium, 30 lbs. by 1 oz., each ..$10 00

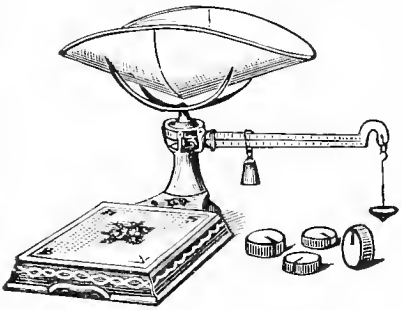
MILK SCALE.



Price, 30 lbs.$5 00
" 60 " 7 00
" 120 " 9 00

UNION SCALES.

Capacity, ½ oz. to 240 lbs.



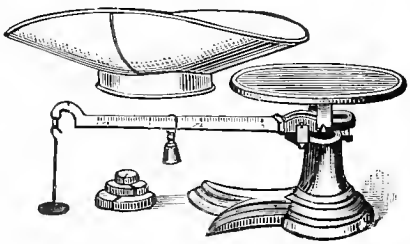
HOWE OR FAIRBANK.

With tin scoop and single beam.....$14 00
" " " " double " 15 00
" brass " " single " 15 00
" " " " double " 16 00

COMMON.

Tin scoop and single beam.....$5 00
" " " double " 6 00
Brass " " single " 6 00
" " " double " 7 00

LITTLE DETECTIVE SCALES.



This little scale is made with steel bearings and a brass beam and will weigh accurately any package from one-quarter of an ounce to twenty-five pounds

Nothing of the kind has ever been sold for less than $8 or $10.

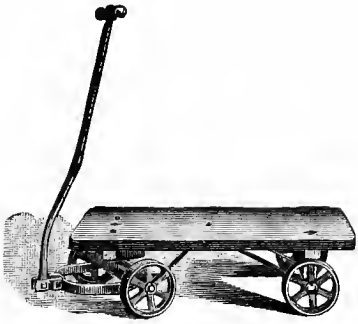
Every scale is perfect.

Scales, without scoop, boxed, weight 10 lbs.....each, $3 00
With platform, tin scoop and balance weight..... " 3 50
With platform, brass scoop and balance weight..... " 3 75

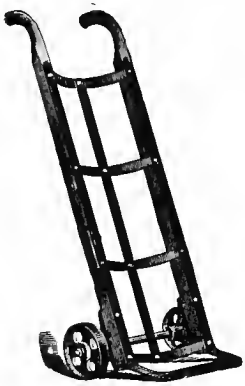
TRUCKS AND SKIDS

PLATFORM

	Each.	With Rubbered Wheels.
No. 1, Size of platform, 3 by 2 ft.	$14 00	$26 00
" 2, " " " 3 feet 2 inches by 2 feet 2 inches..	15 00	27 00
" 3, Size of platform, 3 feet 4 inches by 2 feet 4 inches..	16 00	28 00
" 4, Size of platform, 3 feet 6 inches by 2 feet 6 inches..	17 50	32 50
" 5, Size of platform, 3 ft. 8 in. by 2 ft. 8 in.....	18 50	33 50
" 6, Size of platform, 3 ft. 10 in. by 2 ft. 10 in.....	20 00	35 00



BUTTER OR CHEESE

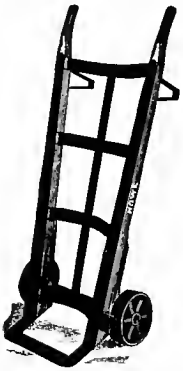


Axles turned, wheels bored and faced.

Length of handles, 54 inches; width of frame, 16 inches; wheels, 7½x2 inches; diameter of axle, 1 inch; weight 55 pounds.

Price.....$12 00

"NEW YORK" BUTTER

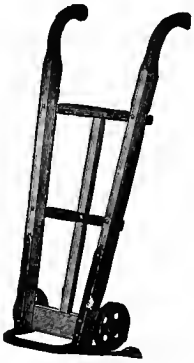


Axles turned and wheels bored.

Length of handles, 54 inches; width at upper bar, 20 inches; width at nose, 13 inches; wheels, 9x3 inches; axle, 1 inch square; weight, 70 pounds.

Price.....$12 00

"CHICAGO DAISY"



Half strapped, with bent plow handles.

Axles turned and wheels bored.

Length of handles, 46 inches; width at nose, 12 inches; width at upper bar, 17½ inches; size of wheels, 5¾x1⅜ inches; axle, ¾-inch square; weight, 25 pounds.

Price.....$5 00

Same as above, but with sawed handles.

Price.....$5 00

Chicago Daisy, light pattern.

Price.....$4 50

Bag Truck, bent handles, with stamped steel nose.....$4 00

SKIDS

Per foot.....$0 75

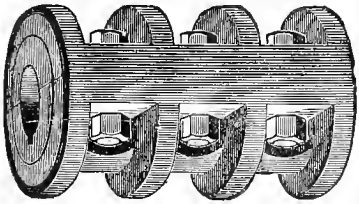
COLD ROLLED SHAFTING.

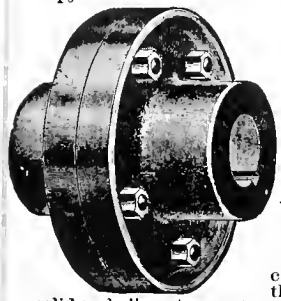
Diameter.	Approximate weight per foot.	Price per foot.	Diameter.	Approximate weight per foot.	Price per foot.
1 inch.	2½ lbs.	$0 60	1 11/16 in.	7½ lbs.	$0 87
1 3/16 "	3¾ lbs.	75	1 15/16 "	9¾ lbs.	1 05
1 7/16 "	5½ lbs.	80	2 3/16 "	12½ lbs.	1 25

IMPROVED COMPRESSION COUPLING.

PRICE LIST.

1 3/16	$5 50
1 7/16	6 00
1 11/16	7 00
1 15/16	8 00
2 3/16	9 00
2 7/16	10 75
2 15/16	16 50





FLANGED FACE COUPLING.

1 3/16	$7 75	2 3/16	$10 50
1 7/16	8 00	2 7/16	12 50
1 11/16	8 50	2 11/16	15 25
1 15/16	9 00	2 15/16	18 25

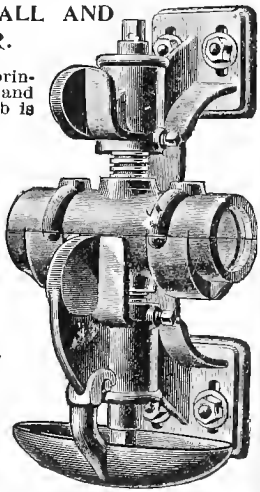
SELF-OILING ADJUSTABLE BALL AND SOCKET POST HANGER.

This hanger is constructed on the same principle as all of our ball and socket hangers, and the boxes are interchangeable. The web is solid and all parts are strong and durable.

From center of shaft to post is six inches in all sizes.

PRICE LIST.

1 3/16	$4 50	1 15/16	$6 00
1 7/16	4 80	2 3/16	7 30
1 11/16	5 20	2 7/16	8 90



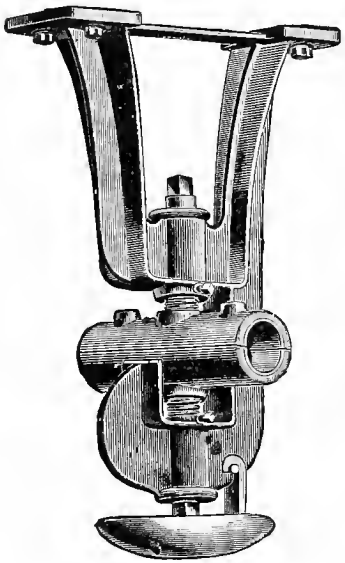
WOOD OR LAG SCREWS.

With square heads. For fastening hangers and separators.

PRICE PER DOZEN.

Length.	3/8	1/2	5/8	3/4
3	$0 40	$0 60	$0 70	$0 90
4	45	65	75	95
5	50	70	80	1 00
6	55	75	85	1 10

SELF-OILING ADJUSTABLE BALL AND SOCKET HANGER



We herewith illustrate our improved Self-Oiling Ball and Socket Drop Hanger, which has been designed with a view of correct proportions, great strength and pleasing appearance.

The box bears against the hanger frame and is prevented from turning or falling from its position while the shafting is being put up by the projection on the front of the frame.

The oil is carried from the oil receptacle to the shaft by a wick which lays in a groove in the bottom of the box, in contact with the shaft, and which extends into the oil well. This system lubricates the shaft freely and evenly.

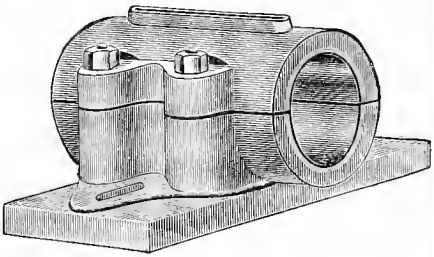
The box is adjustable in all directions, and has a vertical adjustment of from one to three inches.

The bearings are four diameters long and lined with good babbitt.

SIZES AND PRICES.

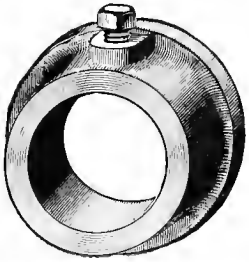
Size of Box.	Drop in Inches.					Size of Box.	Drop in Inches.				
	10	12	14	16	18		10	12	14	16	18
$1\frac{3}{16}$	$4 40	$4 60	$4 90	.....	.....	$1\frac{15}{16}$	$6 00	$6 50	$7 00	$7 50	$7 70
$1\frac{7}{16}$	4 60	4 90	5 20	$5 80	$6 40	$2\frac{3}{16}$	7 30	8 00	8 45	9 00	9 30
$1\frac{11}{16}$	5 10	5 50	5 90	6 25	6 50	$2\frac{7}{16}$	.....	.....	.....	.....	.....

RIGID PILLOW BLOCK.



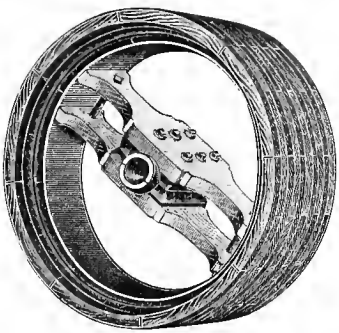
$1\frac{3}{16}$ x $1\frac{1}{4}$ $1 60
$1\frac{7}{16}$ x $1\frac{1}{2}$ 2 00
$1\frac{11}{16}$ x $1\frac{3}{4}$ 2 50
$1\frac{15}{16}$ x 2 ..... 3 10
$2\frac{3}{16}$ x $2\frac{1}{4}$ 3 80
$2\frac{7}{16}$ x $2\frac{1}{2}$ 4 60

Can furnish Ball and Socket Pillow Blocks.



COLLARS.

1	$0 65	$1\frac{15}{16}$	$1 40
$1\frac{3}{16}$	80	$2\frac{3}{16}$	1 60
$1\frac{7}{16}$	1 00	$2\frac{7}{16}$	1 80
$1\frac{11}{16}$	1 20	$2\frac{11}{16}$	2 10
$1\frac{13}{16}$	1 30	$2\frac{15}{16}$	2 40



WOOD SPLIT PULLEYS.

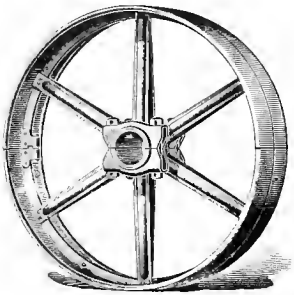
THE PENN.

This pulley is made in halves like other split pulleys, the two halves being held together with bolts in the ordinary way. In addition to these bolts, however, there are clips passing around the shafting and bushing, which are made of iron, and up through the hub-block and spoke of the opposite half of the pulley respectively, which, when tightened, draw the two halves of the pulley and the bushing to the shaft with great force, giving it an unusual grip upon the shaft, so that it is impossible for the pulley to slip.

Diameter of Pulley, Inches.	WIDTH OF FACE IN INCHES.										
	2	3	4	5	6	7	8	9	10	11	12
3	$1.80	$1.90	$ 2.00	$ 2.10	$ 2.25	.....	.....	.....	.....	.....	.....
4	1.90	2.00	2.10	2.20	2.40	.....	.....	.....	.....	.....	.....
5	2.00	2.10	2.20	2.40	2.60	.....	.....	.....	.....	.....	.....
6	2.10	2.20	2.35	2.55	2.75	$ 3.00	$ 3.25	$ 3.50	$ 3.75	.....	.....
7	2.20	2.30	2.45	2.65	2.85	3.10	3.35	3.60	3.85	.....	.....
8	2.35	2.45	2.60	2.80	3.00	3.25	3.50	3.75	4.00	$ 4.30	$ 4.65
9	.....	2.60	2.80	3.00	3.25	3.50	3.75	4.00	4.30	4.65	5.00
10	.....	2.80	3.00	3.25	3.50	3.75	4.00	4.30	4.65	5.00	5.40
11	.....	3.00	3.25	3.50	3.75	4.00	4.30	4.65	5.00	5.40	5.80
12	.....	3.15	3.40	3.65	3.90	4.20	4.55	4.90	5.30	5.70	6.10
13	.....	3.30	3.55	3.80	4.10	4.45	4.80	5.20	5.60	6.00	6.40
14	.....	3.45	3.70	4.00	4.35	4.70	5.10	5.55	6.00	6.45	6.90
15	.....	3.60	3.90	4.25	4.60	5.00	5.45	5.90	6.35	6.80	7.30
16	.....	3.80	4.15	4.50	5.00	5.50	6.00	6.50	7.00	7.50	8.00
17	.....	4.00	4.40	4.90	5.40	5.90	6.40	6.90	7.40	7.90	8.40
18	.....	4.20	4.70	5.20	5.70	6.20	6.70	7.20	7.80	8.40	9.00
19	.....	4.40	4.90	5.40	5.90	6.50	7.10	7.70	8.30	8.90	9.50
20	.....	4.60	5.20	5.80	6.40	7.00	7.60	8.30	9.00	9.70	10.40
21	.....	4.80	5.40	6.00	6.60	7.30	8.00	8.70	9.40	10.20	11.00
22	.....	5.00	5.60	6.30	7.00	7.70	8.40	9.20	10.00	10.80	11.70
23	.....	5.20	5.80	6.50	7.20	8.00	8.80	9.70	10.60	11.50	12.50
24	.....	5.50	6.20	7.00	7.80	8.60	9.40	10.30	11.20	12.10	13.00
25	.....	5.90	6.60	7.30	8.10	9.00	10.00	11.00	12.00	13.00	14.00
26	.....	6.20	7.00	7.80	8.60	9.50	10.50	11.50	12.60	13.75	15.00
28	.....	7.00	7.80	8.60	9.50	10 50	11.60	12.80	14.00	15.20	16.50
30	....	7.70	8.60	9.50	10.60	11.80	13.00	14.30	15.60	17.00	18.50
31	.....	8.00	9.00	10.00	11.10	12.35	13.60	15.00	16.50	18.00	19.60
32	.....	8.50	9.50	10.50	11.60	12.85	14.10	15.50	17.00	18.60	20.30
33	....	9.00	10.00	11.15	12.35	13.65	15.00	16.45	18.00	19.65	21.40
34	....	9.40	10.60	11.80	13.10	14.45	15.90	17.40	19.00	20.70	22.50
35	.....	9.85	11.15	12.45	13.85	15.25	16.80	18.35	20.00	21.70	23.50
36	....	10.30	11.70	13.10	14.60	16.10	17.70	19.30	21.00	22.00	24.00
38	....	....	12.80	14.40	16.00	17.70	19.50	21.20	23.00	24.50	26.00
40	....	....	13.90	15.70	17.50	19.30	21.25	23.10	25.00	26.50	28.00
42	....	....	15.00	17.00	19.00	21.00	23.00	25.00	27.00	29.00	31.00
44	.....	....	17.00	19.00	21.00	23.00	25.00	27.00	29.00	31.00	33.00
46	.....	....	19.00	21.00	23.00	25.00	27.00	29.00	31.00	33.00	36.00
48	.....	.....	21.00	23.00	25.00	27.00	29.00	31.50	33.90	36.20	38.50
50	.....	.....	.....	25.00	27.00	29.00	31.00	33.70	36.20	38.60	41.00

Any standard make furnished when wanted.

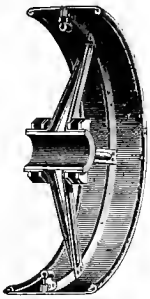
THE "ALL-WROUGHT" STEEL SPLIT PULLEY



General View

Made exclusively of "mild" sheet steel.

The Cheapest Pulley in the Market, quality and durability considered



Half of Pulley showing construction

This pulley is made exclusively of a "mild" sheet steel, accurately rolled to standard gauges, no castings or forgings entering into its make-up. The various parts are cut from sheet metal, and cold-pressed into the requisite forms by machinery especially designed for that work.

SIZES AND PRICES

DIAMETER IN INCHES	FACE IN INCHES							
	2 in.	3 in.	4 in.	5 in.	6 in.	8 in.	10 in.	12 in.
6	$3 15	$3 30	$3 45	$3 75	$4 05	$4 70	.....	.....
7	3 22	3 38	3 60	3 90	4 20	4 85	.....	.....
8	3 30	3 45	3 75	4 05	4 35	4 95	$5 60	.....
9	3 38	3 60	3 90	4 20	4 50	5 10	5 75	.....
10	3 45	3 75	4 05	4 35	4 65	5 25	5 90	$6 45
11	3 65	3 90	4 20	4 50	4 80	5 40	6 00	6 90
12	3 90	4 20	4 63	4 80	5 33	5 78	6 45	7 65
13	4 05	4 35	4 80	5 20	5 62	6 43	7 20	8 40
14	4 20	4 50	5 20	5 65	6 15	7 05	8 03	9 00
15	4 35	4 65	5 45	5 80	6 55	7 65	8 80	9 75
16	4 50	4 95	5 75	6 10	6 90	8 25	9 45	10 50
17	.....	5 25	6 00	6 50	7 28	8 78	10 05	11 25
18	.....	5 55	6 38	7 00	7 65	9 30	10 65	12 00
19	.....	5 80	6 75	7 50	8 25	10 13	11 25	12 90
20	.....	6 00	7 50	8 10	9 00	10 73	12 00	14 25
21	.....	6 25	8 00	8 90	9 60	11 25	12 98	15 60
22	.....	6 50	8 55	9 50	10 28	12 00	14 10	16 80
23	.....	7 00	8 70	9 90	10 58	12 60	14 75	18 00
24	.....	7 50	8 90	10 00	10 95	13 20	15 68	19 05
26	.....	.....	9 55	.....	11 95	14 40	17 10	21 30
28	.....	.....	10 80	.....	12 90	15 45	18 15	22 90
30	.....	.....	12 00	.....	14 10	17 25	19 90	24 75
32	.....	.....	13 20	.....	15 45	19 35	22 50	26 85
34	.....	.....	14 40	.....	17 25	21 75	25 50	30 00
36	.....	.....	15 90	.....	19 50	24 00	28 65	33 75

CLUTCH PULLEYS

We can furnish these either with steel rim or of wood.

Specifications and Prices Given on Application.

BELTING

"GANDY" OR "LEVIATHAN."

For use in creameries and for driving belts the Leviathan has no equal. Fifty per cent. cheaper and every belt guaranteed. It is not affected by water or steam. Try it once and you will use no other.

4-PLY		6-PLY		8-PLY		10-PLY	
INCH.	PER FT.	INCH.	PER FT.	INCH.	PER FT.	INCH.	PER FT.
1¼	$0 11	2	$0 24	4	$0 60	12	$2 40
1½	13	2½	30	5	75	14	2 80
1¾	15	3	36	6	90	15	3 00
2	18	3½	42	7	1 05	16	3 20
2¼	20	4	48	8	1 20	18	3 60
2½	23	4½	54	9	1 35	20	4 00
2¾	25	5	60	10	1 50	22	4 40
3	27	6	72	11	1 65	24	4 80
3½	32	7	84	12	1 80	26	5 20
4	36	8	96	13	1 95	28	5 60
4½	41	9	1 08	14	2 10	30	6 00
5	45	10	1 20	15	2 25	36	7 20
5½	50	11	1 32	16	2 40	40	8 00
6	54	12	1 44	17	2 55	44	8 80
7	63	13	1 56	18	2 70	48	9 60
8	72	14	1 68	20	3 00	54	10 80
9	81	15	1 80	22	3 30	60	12 00
10	90	16	1 92	24	3 60		
11	99	17	2 04	30	4 50		
12	1 08	18	2 16	36	5 40		
13	1 17	20	2 40	40	6 00		
14	1 26	24	2 88				
16	1 44						

Endless belts, 3 feet extra.

When sewing Leviathan belting, always use an awl instead of a punch.

OUR OFFER: To responsible parties we will send one of these belts on thirty days' trial, it to be returned if not satisfactory.

ENDLESS BELTS. We can furnish endless belts to order. Three extra feet will be charged for the splice. These endless belts are well adapted for churn belts.

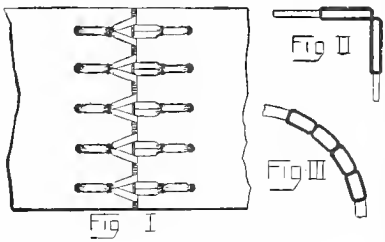
HINTS ON BELT SPLICING

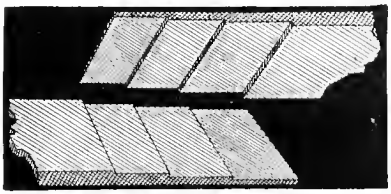
"LEVIATHAN," "D. S. T.," "GANDY," LEATHER & RUBBER BELTING

Extra Strong Hinge Splice for Belting for Heavy Service

The joint may be made with lace leather, or plate hooks.

In lacing use a pointed awl, instead of a hollow punch, making holes no larger than necessary. For ordinary belts the end-to-end joint is best. The joint in heavier belts may be strengthened by placing a cap (piece of the belt) over it, fastened by lacing or hooks. Length of cap should be about the width of the belt.





The Scarfed Splice

Makes practically an endless belt. Cut the plies down in steps to match, taking care not to cut the plies under the parts removed, then sew together with waxed thread or rawhide lace lengthwise of splice.

RUBBER BELTING

INCH.	2-PLY.	3-PLY.	4-PLY.	5-PLY.	6-PLY.	7-PLY.
1	$ 07	$ 09	$ 11			
1¼	09	11	13			
1½	11	13	15	$ 19		
1¾	13	15	17	21		
2	15	17	21	26	$ 31	
2½	18	22	26	32	39	
3	22	26	31	38	46	
3½	26	30	37	46	55	
4	30	34	42	52	63	$ 73
4½	33	39	47	58	70	82
5	36	43	52	65	78	91
6	43	52	62	77	93	1 08
7	51	60	73	91	1 09	1 27
8	59	70	84	1 05	1 26	1 47
9	67	80	95	1 18	1 42	1 66
10	75	90	1 07	1 33	1 60	1 87
11	83	1 00	1 18	1 47	1 77	2 06
12	91	1 08	1 30	1 62	1 95	2 27
13	1 00	1 18	1 42	1 77	2 13	2 48
14	1 08	1 28	1 54	1 92	2 31	2 69
15	1 16	1 38	1 66	2 07	2 49	2 90
16	1 25	1 50	1 78	2 22	2 67	3 11
18	1 41	1 70	2 02	2 52	3 03	3 53
20	1 58	1 90	2 26	2 82	3 39	3 95

ENDLESS BELTS.—These are made to order. *Three Extra Feet* will be charged for the *Splice* subject to the regular discount.

BELT AWLS

"LOTHROP'S" PATENT

A GREAT CONVENIENCE FOR LACING BELTS

Price.....each, $0 75

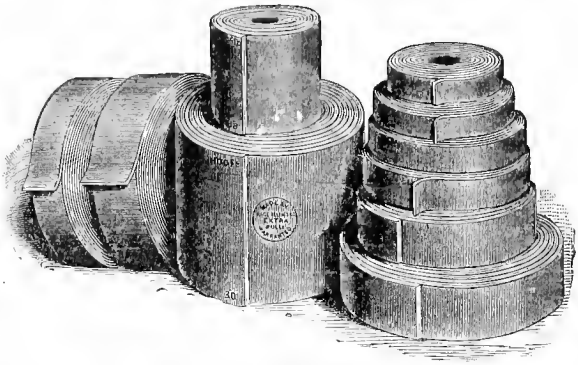
"COMMON"

Used especially in connection with Leviathan Belt. Very strong and durable.

Price.....each, $0 45

BELTING:

LEATHER AND RAWHIDE.



"EXTRA SHORT" LAP AND "CHICAGO" LEATHER BELTING.

Width Inches	Price per Foot	Width Inches	Price per Foot	Width Inches	Price per Foot	Width Inches	Price per Foot
½	$0 10	3¾	$0 82	15	$3 30	32	$ 7 04
⅝	12	4	87	16	3 52	34	7 48
¾	14	4½	98	17	3 74	36	7 92
⅞	16	5	1 09	18	3 96	38	8 36
1	17	5½	1 21	19	4 18	40	8 80
1¼	23	6	1 32	20	4 40	44	9 68
1½	29	6½	1 43	21	4 62	48	10 56
1¾	35	7	1 54	22	4 84	52	11 44
2	41	8	1 76	23	5 06	56	12 32
2¼	47	9	1 98	24	5 28	60	13 20
2½	53	10	2 20	25	5 50	64	14 08
2¾	59	11	2 42	26	5 72	68	14 96
3	64	12	2 64	27	5 94	72	15 84
3¼	70	13	2 86	28	6 16		
3½	76	14	3 08	30	6 60		

Double belts twice the price of single. Intermediate widths at proportionate prices. Extra heavy belts, extra prices.

RAWHIDE BELTING—Same List as above.

RAWHIDE ROPE.

¼ in. diam., per ft..	$0 18	7/16 in. diam., per ft...	$0 27	¾ in. diam., per ft..	$0 46
5/16 " " " ..	21	½ " " " ..	30	⅞ " " " .	60
⅜ " " " ..	24	⅝ " " " ..	36	1 " " " .	72

ROUND BELTING AND RAWHIDE ROPE.

	Solid.	Twist.		Solid.	Twist.		
⅛ in. diam...	$o 07	$0 08	5/16 in. diam...	$0 18	$0 22	½ " "	$0 38
3/16 " " ..	09	12	⅜ " " ..	24	27	⅝ in. diam.....	48
¼ " " ..	14	17				¾ " "	60
						⅞ " "	80
						1 " "	96

For double rawhide belting, the list price will be doubled.

GIANT BELT PASTE

Price, 5-lb. boxes, per lb..... $0 30
" 10-lb. " " 25

Rules for Calculating the Speed of Pulleys.

The diameter of the driven being given, to find its number of revolutions:

RULE—Multiply the diameter of the driver by the number of its revolutions, and divide the product by the diameter of the driven, the quotient will be the number of revolutions of the driven.

The diameter and revolutions of driver being given, to find the diameter of the driven that shall make any given number of revolutions in the same time:

RULE—Multiply the diameter of the driver by its number of revolutions and divide the product by the number of revolutions of the driven; the quotient will be the diameter.

To ascertain the size of the driver:

RULE—Multiply the diameter of the driven by the number of revolutions you wish to make, and divide the product by the revolutions of the driver; the quotient will be the diameter of the driver.

Examples.

A 30 inch pulley making 180 revolutions per minute, drives a counter-shaft with a 12 inch pulley. What is the speed of the latter?

180×30, divided by 12,=450 revolutions per minute.

A counter-shaft is to make 450 revolutions per minute, driven by a 30 inch pulley making 180 revolutions per minute. What will be the diameter of counter-shaft pulley?

180×30, divided by 450,=12 inches.

What will be the diameter of a pulley making 180 revolutions per minute, to drive a 12 inch pulley 450 per minute?

450×12, divided by 180,=30 inch pulley.

In calculating toothed gears, substitute the number of teeth for the diameters, and proceed as above.

Rule for Finding the Length of Belts.

Add the diameter of the two pulleys together, multiply by 3⅛, divide the product by 2, add to the quotient twice the distance between the center of the shafts, and the product will be the required length.

Rule for Calculating the Power of Belting.

One inch single belt moving at a velocity of 1,000 feet per minute=one horse power.

One inch double belt moving 700 feet per minute=one horse power.

Horse power of any belt equals its velocity in feet per minute, multiplied by its width and divided by 1,000, for single, and by 700 for double belts.

BELT PUNCHES

"PATENT"

The best, cheapest and most convenient punch

The tubes are detachable and any size can be used with the punch handle.

Price, Handle and one size Tube only, complete.....$1 00
Extra Tubes, each..... 35

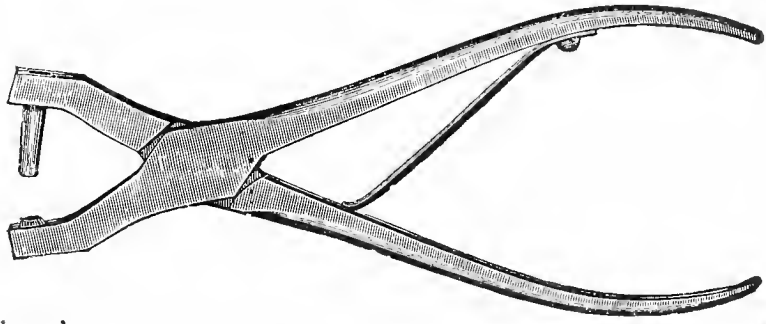
Always order Tubes by number.

COMMON ROUND

Nos. 5, 7 and 9, cast steel, drilled, reamed and oil tempered, each.....$0 25

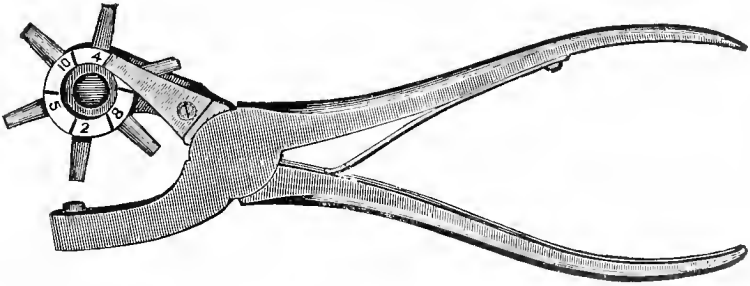
Always state number in ordering.

"SPRING"



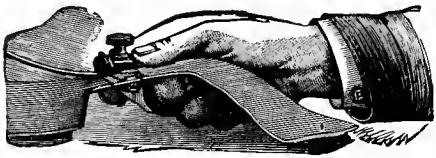
8-inch, each.....$0 50

"REVOLVING SPRING"



Extra cast steel, with four tubes, each.....$1 00

ELLIOT'S LACE CUTTERS



Price, each.....$0 50 | Extra knives, each.....$0 15

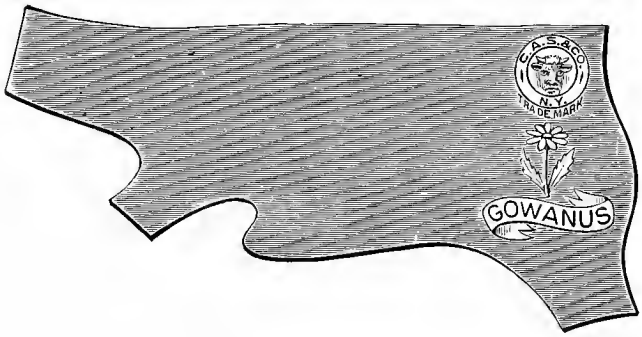
RAWHIDE LACE LEATHER

Our rawhide lace leather is unexcelled in color and finish, and is very tough, retaining its strength even after being on hand for a long time. Every side is marked plainly with the number of square feet that it contains, and stamped with our trade mark.

None genuine without it

PRICE

Best quality rawhide, per square foot $0 30



LACING

CUT RAWHIDE

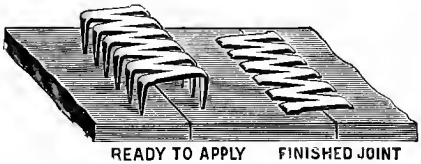
Of the best quality.

Cut Lace in packages of 100 feet.

¼-inch wide, per 100 feet	$0 75	½-inch wide, per 100 feet	$1 40
⅛ " " " 100 "	85	⅝ " " " 100 "	1 75
⅜ " " " 100 "	1 00	¾ " " " 100 "	2 00

Wach's, ⅛-inch wide, for sewing "D. W." and other flat separator belts, per 100 feet..... 70

BRISTOL STEEL

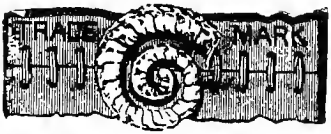


READY TO APPLY FINISHED JOINT

Packed 100 inches in a box, assorted lengths.

No.		Per box.
0	For split and light leather belts	$1.00
1	" ordinary single " "	1.50
2	" extra heavy & wide single leather belts	2.00
3	" light double leather belts	2.50
4	" heavy " " "	3.00
10	" 2-ply rubber and cotton belts	1.10
11	" 3 " " " " "	1.65
12	" 4 " " " " "	2.20
13	" 5 " " " " "	2.75
14	" 6 " " " " "	3.30

KERR'S METALLIC



SIZES

No. 0	sews 1 to 2½ in. belt	
" 1	" 2 " 5 " "	
" 2	" 5 " 12 " "	
" 3	" 8 " 24 " "	
Per foot, net		$0 02
Awls for same, net		85

In ordering, always give number size wanted.

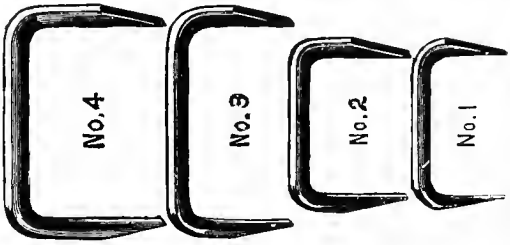
BELT HOOKS, FASTENERS AND STUDS

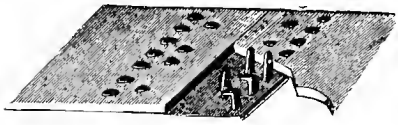
"COVEL" HOOKS

PRICES

No. 1,	per 1,000	$1 75
" 2,	"	2 00
" 3,	"	2 25
" 4,	"	2 50
" 5,	"	2 75

Put up 200 in a box.





"THACHER" PATENT BELT FASTENER

MAKES A CONTINUOUS BELT

FOR SINGLE LEATHER

				Per 100
No. 1, for	1-inch	Belts		$1 50
" 2, "	1½ "	"		2 00
" 3, "	2 "	"		2 50
" 4, "	2½ "	"		3 00
" 5, "	3 "	"		3 50
" 6, "	3½ "	"		4 50
" 7, "	4 "	"		5 50

FOR DOUBLE LEATHER OR 3 AND 4-PLY RUBBER

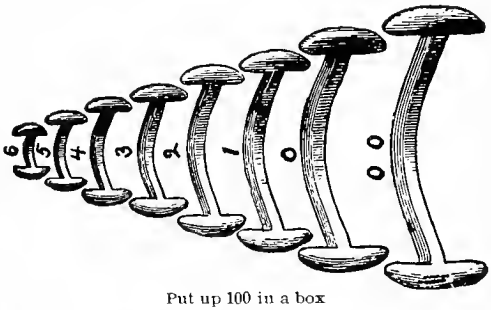
				Per 100
No. 8, for	2-inch	Belts		$5 00
" 9, "	2½ "	"		6 50
" 10, "	3 "	"		7 50
" 11, "	3½ "	"		8 50
" 12, "	4 "	"		9 50

In ordering please state width of Belts. Two or more Hooks used on wider Belts.
Put up in boxes of 50 and 100 each.

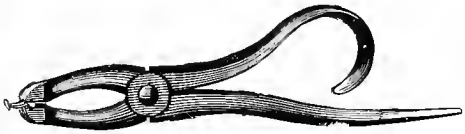
"BLAKE'S" PATENT BELT STUDS

Packed in boxes of 100 each; directions on the box. No. 0 for the heaviest double leather or five and six-ply rubber belt. No. 6 for the thinnest sewing machine belt, which needs to run very smooth. Intermediate sizes in proportion.

No	6	5	4	3
Per box	$0 60	70	80	90
No		2	1	0
Per box	$1 25	1 65	2 00	



Put up 100 in a box



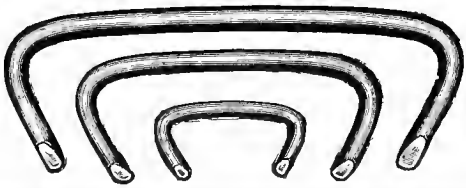
PLIERS AND AWL COMBINED

TO BE USED IN CONNECTION WITH THE "BLAKE'S" STUDS

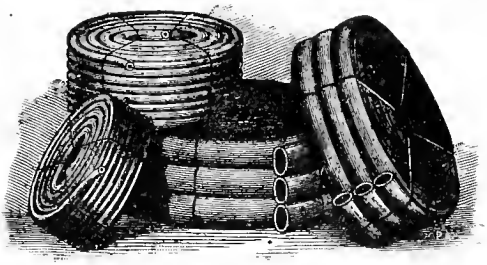
Price.....each, $0 50

"JONES'" IMPROVED POINTED BELT HOOKS

No.			No.		
15,	per 1000,	$2 00	10,	per 1000,	$3 50
14,	"	2 40	9,	"	4 00
13,	"	2 60	8,	"	5 00
12,	"	2 80	7,	"	6 00
11,	"	3 00	6,	"	8 50



HOSE



STEAM				CONDUCTING				
Internal Diam.	3-ply	4-ply	5-ply	Internal Diam.	2-ply	3-ply	4-ply	5-ply
½ inch	$0 43	$0 51	$0 63	½ inch	$0 20	$0 25	$0 30	.....
¾ "	51	67	83	¾ "	....	30	37	.....
1 "	67	83	1 03	1 "	....	40	50	$0 63
1¼ "	85	1 04	1 30	1¼ "	...	50	62	78
1½ "	1 02	1 25	1 56	1½ "	....	60	75	94
1¾ "	1 18	1 45	1 81	2 "	....	80	1 00	1 25
2 "	1 34	1 66	2 07	2½ "	....	1 00	1 25	1 37

Winding Conducting Hose with "Clinch Grip" Round Steel Wire

Prevents expansion and adds greatly to the strength of the hose

PRICE FOR WINDING

	3-ply	4-ply	5-ply	6-ply		3-ply	4-ply	5-ply	6-ply
½ inch per ft.	$0 03	$0 04	$0 05	$0 06	1¾ inch... per ft	$0 09	$0 10	$0 11	$0 12
¾ " "	04	05	06	07	2 " "	10	11	12	13
1 " "	05	07	08	09	2¼ " "	11	12	13	14
1¼ " "	07	08	09	10	2½ " "	12	13	14	15
1½ " "	08	09	10	11					

HARD RUBBER SUCTION

This hose is intended for pumps. It will not collapse, and will be found a reliable, low-priced article.

Int. diam.	Per ft.	Int. diam.	Per ft.	Int. diam.	Per ft.	Int. diam.	Per ft.
¾ inch	$0 65	1¼ inch	$0 93	1¾ inch	$1 31	2¼ inch	$1 69
1 "	75	1½ "	1 13	2 "	1 50	2½ "	1 88

INSERTED WIRE SUCTION

Same list as Hard Rubber Suction Hose

COTTON GARDEN, RUBBER LINED

"Plain Cotton," "Paramount" and "Black Line."

½ inch.....per foot, $.....
¾ " ..... " .....
1 " ..... " .....
1¼ inch.....per foot, $.....
1½ " ..... " .....

Prices for this hose will be furnished on application.

HOSE FITTINGS

HOSE PIPE WITH SCREW TIP

Size, inches	¾	1	1¼	1½	2
Length	7½	8½	11	13	20
Price	$ 70	85	1 65	2 10	4 20

HOSE PIPE WITH COCK

Size, inches	¾	1	1¼	1½
Length	6¾	9½	20	22½
Price	$0 90	1 65	4 60	7 00

Iron pipe thread and special lengths, extra.

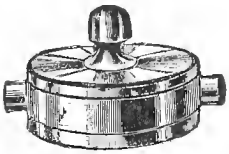
HOSE NOZZLE

Size, inches	¾	1	1¼	1½	2
Length to screw, inches	3	4	4¾	5¾	6¾
Length to wind, inches	5½	6	6⅜	....	....
Hose pipe thread, each	$0 35	40	1 00	1 50	2 20
Iron " " "	40	55	1 15	1 65	2 40
To wind, each	35	40	1 00	....	....

HOSE COUPLINGS (Brass)

Size, inches	¾	1	1¼	1½	2
Price	$0 20	35	85	1 15	2 00

HOSE CAPS



Size, inches	¾	1	1¼	1½	2	2½	3	3½	4
Price each	$0 35	50	65	85	1 25	2 00	2 60	3 25	3 60

HOSE FITTINGS

NIPPLES

Size, inches	½	¾	1	1¼	1½	2
Price, each	$0 30	$0 30	$0 45	$0 75	$0 85	$1 15

CLAMPS

Size, inches	½	¾	1	1¼	1½	2	2½
Price, each	$0 15	$0 15	$0 20	$0 25	$0 30	$0 40	$0 60

MALLEABLE CLEVIS

Price, each $0 50

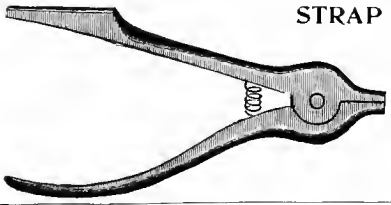
SPRINKLER

Size, inches	¾	1	1¼	1½	2
Price, each	$0 40	$0 50	$1 25	$1 75	$2 50

STRAPS

No. 2,	½ inch,	3⅜ inches long,	per doz.			$0 40
" 4,	½ "	3¾ "	"	"	...	40
" 6,	¾ "	4⅛ "	"	"	....	60
" 8,	¾ "	4¾ "	"	"	....	60
" 10,	1 "	5 "	"	"	....	80
" 12,	1 "	5⅜ "	"	"	....	80
" 14,	1¼ "	6 "	"	"	.....	$1 00
" 16,	1¼ "	6⅜ "	"	"	.....	1 00
" 18,	1½ "	6¾ "	"	"	.....	1 20
" 20,	1½ "	7⅛ "	"	"	.....	1 20
" 22,	1¾ "	7½ "	"	"	.....	1 40
" 24,	1¾ "	8 "	"	"	.....	1 40

STRAP FASTENERS



Price, ½ to 1 inch. $0 50
" ½ " 2½ " 75

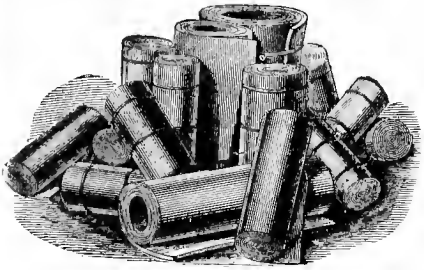
MENDER

Size, inches	Price per dozen
½ and ¾ inch	$0 60
1 inch	75

PACKING

"CLOTH INSERTION"

Cloth on one or both sides. This article is now considered indispensable by engineers and machinists wherever steam, air or water joints are to be made, as no substance has so much elasticity and stands so high a degree of heat.



Thickness, in..	1/64	1/32	1/16	3/32
1-ply, per lb...	$0 70	$0 65	$0 60	$0 55
2 " " ...	.....	.....	63	58
3 " " ...	.....	.....	.....	61
4 " " ...	.....	.....	.....	.....
Thickness, in.	**1/8**	**3/16**	**1/4**	.....
1-ply, per lb...	.....	.....	.....	.....
2 " " ..	$0 55	.....	.....	.....
3 " " ..	58	$0 55	..	.....
4 " " ..	61	58	$0 55	.....

"RAINBOW" SHEET

Price, per lb $0 80

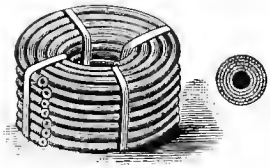
Made in the following thicknesses: 1/32, 1/16, 3/32, 1/8, 3/16 and 1/4-inch

"JENKINS'" SHEET

Price, per lb $0 80

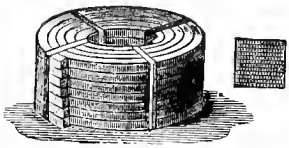
Made in the following thicknesses: 1/32, 1/16, 3/32, 1/8, 3/16, and 1/4-inch

PISTON



ROUND

Round Empire Gum Core, 1/4 to 1/2 in. Per lb..... $0 50
Seiden's 1/4 inch and larger. Per lb..... 60
Jenkins' Square Manhattan. Per lb..... 1 00
Square Duck with rubber back. Per lb 80
Square Flax. Per lb 40



SQUARE

HEMP

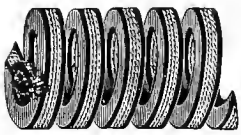
Best Italian, per lb..... $0 20

ASBESTOS WICK

In 1/4, 1/2 and 1 lb. balls, per lb..... $0 60

CANDLE WICKING

Per lb.....$0 25 Per ball. $0 05



SPIRAL

GARLOCK

PRICES

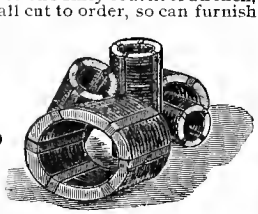
For any size of Piston and Box

Per lb..... $1 20

ELASTIC RING

In ordering "Spiral" packing give exact space between rod and stuffing box. Sold in full boxes only. Weight, per box, 5/8 lb. for 1/8-inch to 3 3/4 lbs. for 5/8-inch. In ordering "Elastic Ring" packing be very careful in taking measurements With a pair of calipers take the exact diameter of rod, also diameter of stuffing box. These measurements must be very exact, even to one sixty-fourth of an inch, otherwise we cannot give you an exact fit. "Elastic Ring" packing is all cut to order, so can furnish any size wanted from 5/8 to 30 inches diameter.

GASKETS AND RINGS



CLOTH INSERTION

There is one ply of cloth to every 1-16 inch thickness.

Regular shapes and sizes, per lb..... $1 00

"ECLIPSE" GASKET TUBING

Made in any size. The user cuts off length required and inserts metal tube to join the ends Very convenient.

Price..... per lb, $0 80

COTTON WASTE.

PRICES.

	100 lb. bales.	Small lots.
White, best machine cop. per lb.,	$0 08½	$0 09
Colored, extra fine..... "	07	07⅛

BABBITT.

FRICTIONLESS.

This is an eminently superior bearing **Metal.**
About 5 pounds to the Cake.

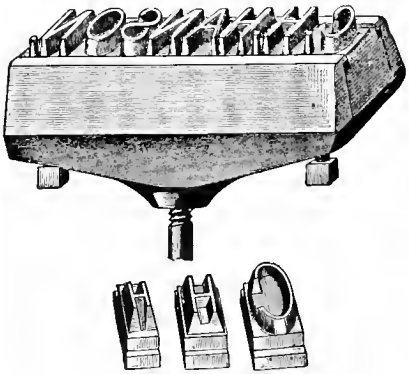
PRICES.

In 20 lb. boxes... .....per lb. $0 ..
In small lots .... " ..

BABBITT LADLES.

Diameter .....inches.	2½	3	3½	4	5	6
Price.....	$0.30	.35	.40	.50	.70	.85

HANSON'S IMPROVED BURNING BRAND



Handle 16 inches long.

For marking export Boxes, Barrels, Kegs, Tubs and wooden articles of every description, as also Horses and Cattle.

BRANDS WITH NAME, COMPLETE

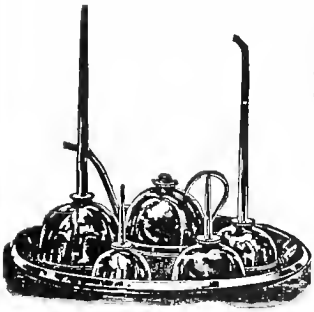
	¼ in.	⅜ in.	½ in.
Brands of 4 letters.....	$1.00	$1.00	$1.00
" " 5 "	1.15	1.20	1.25
" " 6 "	1.30	1.40	1.50
" " 7 "	1.45	1.60	1.75
" " 8 "	1.60	1.80	2.00
" " 9 "	1.75	2.00	2.25
" " 10 "	1.90	2.20	2.50
" " 11 "	2.05	2.40	2.75
" " 12 "	2.20	2.60	3.00
" " 13 "	2.35	2.80	3.25
" " 14 "	2.50	3.00	3.50
" " 15 "	2.65	3.20	3.75

SINGLE LETTERS

¼ in., each, 8c. | ⅜ in., each, 9c. | ½ in., each, 10c.
Solid Iron Brands, 45c. per lb. 25c. per letter.
Solid Copper Brands, 40c. per lb. 25c. per letter.

OIL CANS

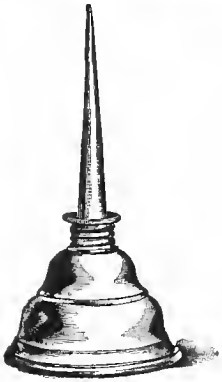
ENGINEER'S SETS—Single Bottom Trays



These goods are all heavy brass nicely finished. These sets are not only very convenient and serviceable, but present a handsome appearance in an engine room. They are cheap, substantial and elegant.

Number polished brass	List price per set	Number of pieces in a set	Number nickel-plated finish	List price per set
30	$6 00	5	50	$ 8 00
40	9 00	6	60	11 00

SPUN ZINC



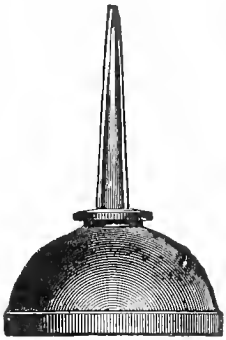
Zinc.

No.	Diameter of bottoms, inches	Price, Tin bottoms	Price, Brass bottoms
1	2⅝	$0 15	$0 20
2	3¼	20	25
3	3¾	25	30
4	4⅛	30	35
5	4½	35	40

STEEL

With brazed steel bottoms and cold-rolled tubes. Copperized finished.

No.	Diameter of bottom, inches	Price
12	2¾	$0 40
13	3⅜	50
14	3¾	55
15	4¼	80
16	4¾	90



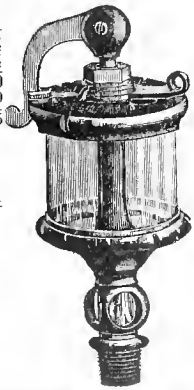
Steel.

OIL CUPS

"POWELL" SIGHT FEED

PRICES

No.	00	0	1	1½	2	3	4	5	6
Outside Diameter of glass, inches	1⅛	1¼	1½	1¾	2	2¼	2½	3	3½
Pipe thread	⅛	⅛	¼	¼	⅜	⅜	⅜	½	½
Finished brass	....	1 25	1 50	1 75	2 10	2 55	3 15	3 90	4 80
Nickel-plated	....	1 40	1 70	2 00	2 35	2 85	3 50	4 30	5 30
Extra glasses, net	06	08	10	10	12	15	25	35	65



PLAIN

Diameter of body, inches	Size, iron pipe, inches	Price, each
¾	⅛	$ 0 30
⅞	⅛	35
1	¼	40
1⅛	¼	50
1¼	¼	60
1½	⅜	90
1¾	⅜	1 25
2	⅜	1 75

OILS

Poor oils are expensive, dangerous, worthless, cost too much at any price. Our oils are compounded with great care and are the best that can be produced. You will save repair bills by using the best, and if you get your oils from us you will be sure to have the best. We guarantee each and every gallon.

PRICE

World's Fair Separator, single gallons	per gallon, $.....
" " " 5-gallon cans	" " .....
" " " 10 " "	" " .....
" " " barrel lots	" " .....
Imperial Separator, single gallons	" " .....
" " 5-gallon cans	" " .....
" " 10 " "	" " .....
" " barrel lots	" " .....
Reliance Engine, single gallons	" " .....
" " 5-gallon cans	" " .....
" " 10 " "	" " .....
" " barrel lots	" " .....
Extra Castor, single gallons	" " .....
" " 5-gallon cans	" " .....
" " 10 " "	" " .....
" " barrel lots	" " .....
Tiger Cylinder, single gallons	" " .....
" " 5-gal. cans, per gal., $....	Zero for Refrig'r Mach'y, single gal., $....
" " 10 " " " " "	" " " " 5-gal. cans " .....
" " barrel lots.. " "	" " " " 10 " " " .....
	" " " " barrel lots, " .....

For Prices see our Monthly Price Current

Lard oil and linseed oil at market prices

Try one Gallon or a Barrel of any of the above Oils. We send any Grade on Trial.

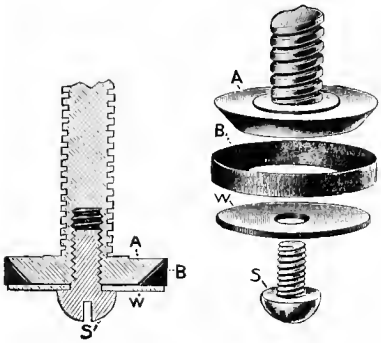
OIL CANS WITH PUMP

The cheapest pump tank in the market. Made of **best quality of galvanized iron** in body and bottom; wood bottom under the metal; painted and ornamented; pump used for transferring oil from barrels. A very neat and serviceable article for storage of oils or butter colors.

SIZES AND PRICES

30-gallon, with pump	$5 00
60 " " "	6 50
Pump, if separate	1 50

THE "MOON" AUTOMATIC GREASE CUP.



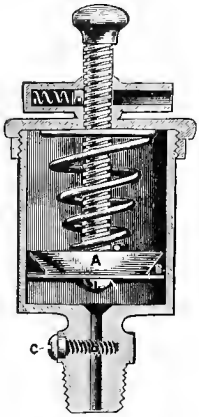
Sectional View of Plunger and Washer.

The excellent features of this cup cannot fail to recommend it at once. It has a beveled leather washer which insures a tight joint and smooth working. The washer can be expanded by the adjusting screw on bottom of plunger. The spring and plunger are controlled by the thumb nut on top of cup, which will not jar from position. The rate of feed is regulated by screw "C."

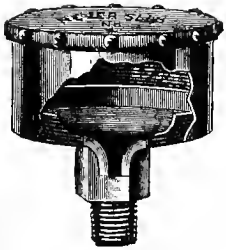
To OPERATE—Turn thumb nut down until plunger is drawn up to the cover, then unscrew cover and fill cup with grease; replace cover, turn thumb nut up the distance you desire plunger to go while feeding. To stop feeding, have thumb nut on top of cover.

PRICE LIST.

Number of Cup	0	1	2	3	4	5
Diameter.....inches	1	1½	2	2⅛	2¾	3½
Height over all..... "	2¾	3⅜	4⅜	4¾	6¼	8
Pipe Thread ..... "	⅛	¼	¼	⅜	½	½
Capacity.....ounces	⅓	1	1½	2½	5	6½
Finished Brass.....each	1 50	2 00	2 50	3 20	4 30	5 50
Ninished Nickeled..... "	1 75	2 40	3 00	3 60	5 00	6 20



Moon Automatic.

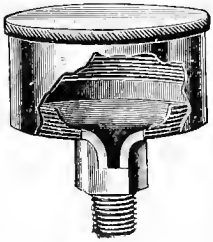

The "Neverslip."

THE "STAR" AND "NEVERSLIP" GREASE CUPS.

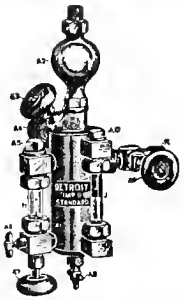
Lightest and Strongest Cup Made.
Can be Used on all Machinery.
A Trial will Convince You.

PRICE LIST.

Number of Cup	1	2	3	4	5	6	7
Diameter.....inches	1⅛	1½	1⅞	2⅛	2¾	3	3½
Height..... "	1½	1¾	2	2¼	2¾	4¾	6¼
Pipe Thread .... "	⅛	¼	¼	⅜	½	½	¾
Finished Brass... each	70	90	1 15	1 50	2 15	2 90	4 80
Finished Nickeled "	90	1 05	1 35	1 80	2 60	3 50	5 00
Rough..... "	40	80	1 05	1 35	1 80	2 80	4 25


The "Star."

CUP GREASE, per pound, 15 cents.



DOUBLE CONNECTION.

THE "DETROIT" IMPROVED STANDARD LUBRICATOR

FOR STATIONARY ENGINES

This Lubricator is intended especially for the better classes of engines, and represents the very highest development in its line. It is the most convenient, most durable and most reliable sight-feed lubricator made.

Among the Improvements it possesses are the following:

1. The support arm is in two parts. The part containing the globe valve is first screwed into the steam-pipe, and the lubricator is then coupled to it. This makes the attachment very easy, and, on account of the globe valve, the lubricator proper can be removed at any time, for repairs or otherwise, without letting down steam.

2. The heating passage from the upper sight-feed arm fo the support arm passes directly through the body of the lubricator, and, being always filled with steam. it keeps the oil constantly warm and in a thoroughly liquid condition. This lubricator is particularly well adapted for feeding heavy oils.

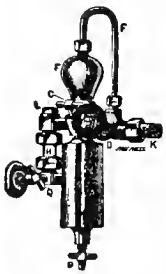
3. There is a drain stem under the sight-feed glass, which allows the water to be drained out and the glass cleaned at any time.

4. The oil is poured directly into the body in the pint and larger sizes, doing away with the necessity of a vent.

5. The sight-feed and gauge glasses are inserted through the upper arms.

6. The sight-feed glass and the valve regulating the feed are on the opposite side from the steampipe.

SIZES AND PRICES



SINGLE CONNECTION

With Double Connection

Size.	Plain Brass.	Nickel-Plated.	Suitable for engine with diam. of cylinder as follows:
One-third pint..	$17 00	$20 00	Up to 18 inches.
Half-pint.....	22 00	25 00	8 to 10 "
Pint.....	30 00	35 00	10 to 18 "
Quart.....	45 00	50 00	18 to 30 "
Half-gallon.....	60 00	65 00	30 and over.
Gallon.....	75 00	80 00	.....

With Single Connection

Size.	Plain Brass.	Nickel-Plated.	Suitable for engine with diam. of cylinder as follows:
One-fourht pint.	$15 00	$18 00	Up to 6 inches.
One-third pint ..	17 00	20 00	6 to 8 "
One-half pint...	20 00	23 00	8 to 10 "

LUBRICATOR GLASSES

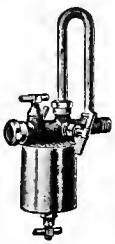
We carry in stock ⅝ and ¾ glass tubing. As glasses vary in size and length, according to style and size, it will be necessary to give exact outside diameter and length when ordering.

Gaskets always sent with glasses.

Price, each, with gaskets.....$0 20

SWIFT LUBRICATOR

CLASS G. SINGLE OR DOUBLE CONNECTION



This style of Lubricator has been placed upon the market in answer to the request of many builders of portable and traction engines, steam pumps, etc., who desire a sight-feed cup that shall be low in price and at the same time reliable in its action.

Correct in principle, positive in operation, elegant in design and finish, it is certainly desirable for such uses.

PRICE LIST, CLASS G

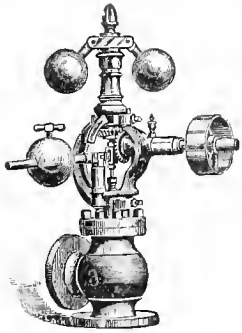
Capacity,	One-eighth pint.....	Brass Finish,	$2 50	Nickel-plated,	$3 00
"	One-quarter pint.....	" "	3 00	" "	3 50
"	One-third pint.....	" "	3 75	" "	4 25
"	One-half pint...	" "	4 50	" "	5 00

We can furnish extras for any style of Lubricator.

STEAM ENGINE GOVERNORS.

(PICKERING, GARDNER, WATERS OR JUDSON)

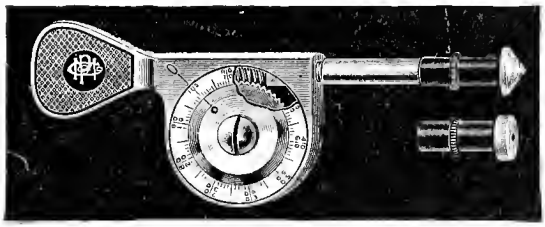
Size of Governor or Diameter of Steam Pipe in inches.	Class B.		Class A.	
	Plain.	Finished	Plain.	Finished
½	$16 00	$18 00	.....	
¾	18 00	20 00	.....	
1	20 00	22 00	$23 00	$25 00
1¼	22 00	25 00	25 60	28 50
1½	25 00	29 00	29 50	33 50
2	30 00	34 00	36 00	40 00
2¼	35 00	40 00	42 00	47 00
2½	40 00	45 00	48 00	53 00
3	50 00	58 00	59 00	67 00
3½	60 00	69 00	71 00	80 00



Class "B" with speeder only. Class "A" with speeder and stop motion.
In ordering, state whether bottom connections are screwed or flanged; speed of engine, diameter of governor belt pulley on main shaft.

SPEED INDICATOR

STARRETT

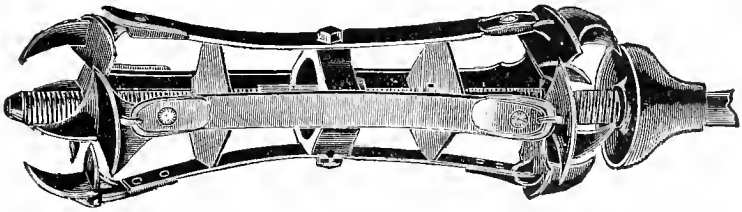


Can be carried in the pocket; is nicely finished and above all, is accurate.

To ascertain the number of revolutions of any shaft in a given time, place the point of the indicator in the center of the shaft; for every 100 revolutions the dial will revolve once.

Price.....$1 00

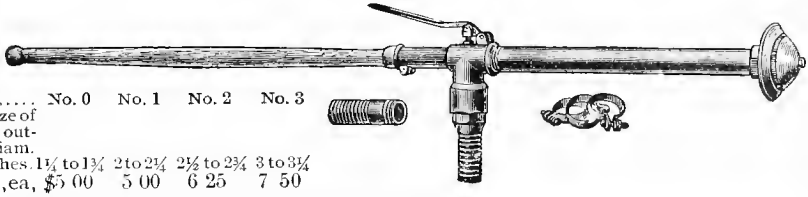
ENGINEERS' "FAVORITE" FLUE SCRAPER



Outside diam. of tubes .....inches,	1¾	2	2¼	2½	2¾	3	3¼
Price of flue scraper.....each,	$2 00	2 00	2 25	2 50	2 75	3 00	3 25

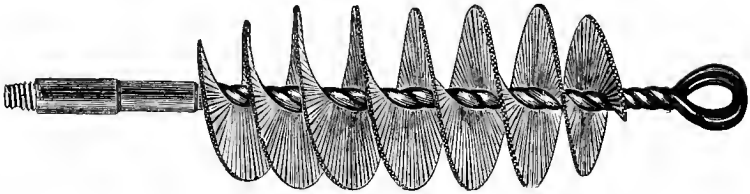
STEAM FLUE CLEANERS

FOR UPRIGHT OR HORIZONTAL BOILERS



Size.....	No. 0	No. 1	No. 2	No. 3
For size of tube, outside diam. in inches.	1¼ to 1¾	2 to 2¼	2½ to 2¾	3 to 3¼
Price, ea,	$5 00	5 00	6 25	7 50

STEEL BRUSH FLUE CLEANER



SIZES

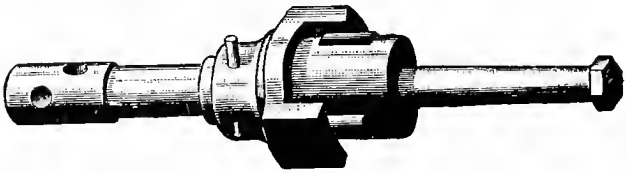
1½ inch, 1¾ inch, 2 inch, 2¼ inch, 2½ inch and 3 inch in diameter.

Per inch of diameter $0 50

IN ORDERING ALWAYS STATE SIZE CLEANER WANTED

ROLLER FLUE EXPANDER

CLASS "A"



SIZES AND PRICES

Diameter, Inches	1	1¼	1½	1¾	1⅞	2
Price, Each	$10.00	10.00	10.00	10.00	10.00	10.00
Diameter, Inches	2¼	2½	2¾	3	3¼	3½
Price, Each	$12.00	14.00	16.00	18.00	20.00	23.00
Diameter, Inches	3¾	4	4¼	4½	5	6
Price, Each	$25.00	30.00	35.00	40.00	50.00	60.00

The above sizes given are for outside dimensions of tubes.

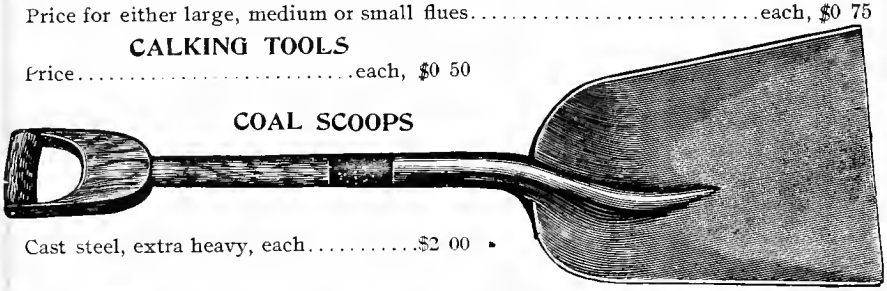
BEADING TOOLS

Price for either large, medium or small flues ..... each, $0 75

CALKING TOOLS

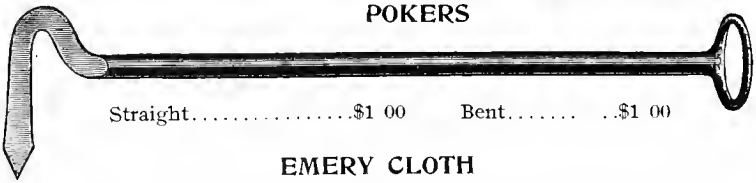
Price ..... each, $0 50

COAL SCOOPS



Cast steel, extra heavy, each $2 00

POKERS



Straight ..... $1 00 Bent $1 00

EMERY CLOTH

		PER QUIRE.	PER SHEET.
No. 00, 0, ½, very fine, and 1 and 1½	Fine	$1 25	$0 10
" 2	Medium	1 35	10
" 2½	Coarse	1 50	16
" 3	Very "	1 65	10

CROCUS CLOTH

For cleaning Separator Spindles ..... per sheet, $0 10

STEAM WHISTLES.

CHIME STEAM.

The peculiar merit of this whistle consists in producing three distinct tones pitched to the first, third and fifth of the common musical scale, which harmonize and give an agreeable musical chord.

Single Bell Chime Whistle.

PRICES SINGLE BELL CHIME WHISTLE.

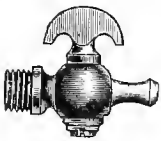
Diameter of bell, in....	1½	2	3	4	5
Size of steam pipe, in..	⅜	½	¾	1	1¼
No. 1.....	$ 4 50	$ 5 00	$ 8 00	$14 00	$28 00
No. 2				18 00	35 00
No. 3.....	6 00	7 00	11 00	18 00	35 00

VALVE STEAM WHISTLES.

Size of pipe, in ...	⅜	¼	½	¾	¾	1	1	1¼
Diam. of bell, in...	1	1¼	1½	2	2½	3	3½	4
Without valve, each	$2 20	2 75	3 00	4 35	5 25	7 25	9 50	12 00
With valve, "	3 10	3 74	4 00	5 50	6 50	8 50	11 50	15 00

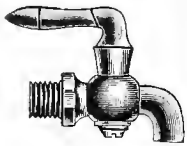
With Valve.

AIR COCKS.



Straight Nose

Size, iron pipe, inches	⅛	¼	⅜	½
Tee handle, straight, each	$0 40	40	50	60
Lever handle, Bibb, ea.	80	80	90	1 00

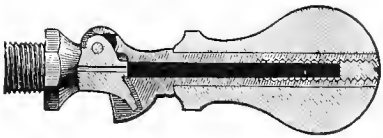


Bibb

GAUGE COCKS.

COMPRESSION, WITH SOFT METAL SEAT.

Diameter of shank, inches....	⅝	¾	1
Will chase (iron pipe sizes) in.	⅜	½	¾
Price, with wood handle.....	$1 10	1 20	1 35
With stuffing box.....	1 35	1 50	1 70



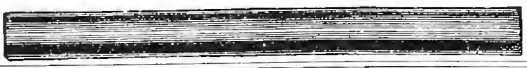
BALL GAUGE COCKS.

Sizes, ½ inch and ¾ inch.

Price, either size..... .....$1 00

SCOTCH WATER GLASSES.

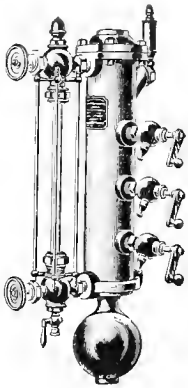
FOR WATER GAUGES.



Length, inches.....	10	11	12	13	14	15	16	17	18	19	20	22	24	30	36
¾-inch diameter, each.....	30	33	36	40	43	46	49	52	55	59	62	68	74	93	1 12
⅝ " " "	25	27	30	32	35	37	40	42	45	47	50	55	60	75	90

½-inch glasses same list as ⅝-inch glasses.

Rubber washers for same, 20 cents per dozen, net.



Highest and only awards at the World's Fair.

RELIANCE SAFETY WATER COLUMN

You need a **Reliance** Safety Water Column. Why? Not because of the danger of a boiler explosion alone, but because of the advantages in using. No stoppage; no leaky boilers; no burned boilers; no bursted cylinders; saving of fuel; saving of boilers; steady power. The Reliance Safety Water Columns are the only successful columns and they are warranted.

These low water alarm columns whistle only when the water lins reaches the center of the lower guage cock.

Any kind of water gauge or gauge cocks may be used. In selecting columns, care should be taken to get those with proper distance between the upper and lower gauge cocks in accordance with the natural variation of the water in the boiler on which they are to be used. Ordinarily, the distance between the extreme gauge cocks provided for, with any boiler, can be taken as a guide in this respect.

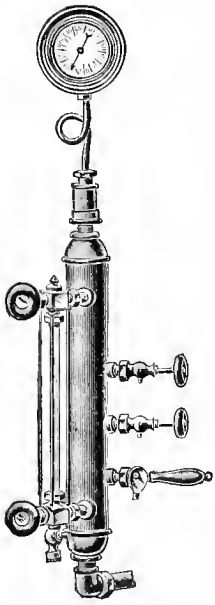
PRICE LIST OF THE RELIANCE SAFETY WATER COLUMNS

Combined High and Low Water Alarms.					General Dimensions.								
Size of Column.	Kind and Size of Boiler.	Variation. Between Alarms.	List Price of Columns.	List Price of Water Gauge and Gauge Cocks.	Steam and Water Connections.	Blow off.	Water Gauge.	Gauge Glass.	Gauge Cocks Centers.	Gauge Cocks Size.	Center of Water Connection to Top of Column.	Diameter of Column.	Length over all.
NO.	IN.	IN.			IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	36 to 54	6	$28 00	$ 7 00	1	½	½x14	⅝x12	3	½	16	3¾	23¼
1½	36 to 54	6	28 00	7 00	1¼	¾	½x14	⅝x12	3	½	19¾	5	28¼
5	54 to 72	8	30 00	10 00	1¼	¾	¾x18	¾x16	4	¾	20½	4¼	29½
7	Water tube	12	35 00	10 00	1½	¾	¾x21	¾x19	6	¾	26	5¼	36
9	Vertical	18	40 00	10 00	1½	1	¾x26½	¾x24	9	¾	33½	5¼	44
12	"	24	42 50	12 50	1½	1	¾x32½	¾x30	12	¾	46½	5	58
13	"	30	45 00	*20 00	1½	1	¾x38½	*¾x36	10	¾	52½	5	64
15	"	36	50 00	*20 00	1½	1	¾x44½	*¾x42	12	¾	58½	5	70
Low Water Alarms.					General Dimensions.								
2	36 to 54	....	$25 00	$ 7 00	1	½	½x14	⅝x12	3	½	16	3¾	23¼
6	54 to 72	.....	28 00	10 00	1¼	¾	¾x16	¾x14	4	¾	18¼	4¼	27½
8	Vertical.	.....	35 00	10 00	1½	¾	¾x21	¾x19	6	¾	26	5¼	30

*Two glasses joined at center with stuffing box. Four gauge cocks.

☞ NOTE.—In ordering never fail to state whether the gauge cocks should be at the right or left of the water gauge. Columns with the cocks at the right of the water gauge are *right hand columns*, and those with the cocks at the left of the water gauge are *left hand columns*. The column in this circular is a right hand column. Larger sizes made to order.

COMBINATION WATER AND STEAM GAUGES.



No. 1 combination gauge, complete..... $15 00

With trimmings as follows:

3 $\frac{5}{8}$-inch gauge cocks, chased for $\frac{3}{8}$-inch pipe.
1 No. 1 water gauge.
1 $5\frac{1}{2}$-inch iron case steam gauge, original Bourdon spring.
1 $\frac{1}{2}$-inch nipple, globe valve and siphon.

For $\frac{1}{2}$-inch steam connection.

No. 2 combination gauge, complete..... $20 00

With trimmings as follows:

3 $\frac{3}{4}$-inch gauge cocks, chased for $\frac{1}{2}$-inch pipe.
1 No. 2 water gauge.
1 $5\frac{1}{2}$-inch iron case steam gauge, original Bourdon spring.
1 $\frac{1}{2}$-inch nipple, globe valve and siphon.

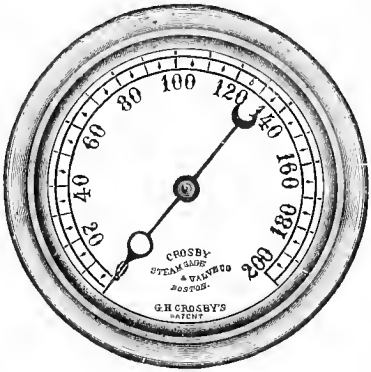
For $\frac{3}{4}$-inch steam connection.

Syphon for steam gauge..... $0 75

STEAM GAUGES.

Iron Case, Japanned.

$2\frac{1}{2}$ inch dial..... $6 00
$3\frac{1}{2}$ " 7 00
$4\frac{1}{2}$ inch dial..... $ 8 00
5 " 8 00
$5\frac{1}{2}$ " 10 00
6 " 13 00
$6\frac{3}{4}$ " 16 00
$8\frac{1}{2}$ inch dial..... 22 00
10 " 32 00
12 " 50 00



WATER GAUGES.

Rough, $\frac{1}{2}$ x 10 glass, $\frac{3}{8}$ iron pipe, each..... $2 00
Rough, $\frac{5}{8}$ x 12 glass, $\frac{1}{2}$ iron pipe, each..... 2 75
Rough, $\frac{5}{8}$ x 12 glass, $\frac{1}{2}$ iron pipe, each..... $3 00
Finished, $\frac{5}{8}$ x 12 glass, $\frac{1}{2}$ iron pipe, each..... 4 00
" $\frac{5}{8}$ x 12 " $\frac{1}{2}$ " " 5 50
" $\frac{3}{4}$ x 12 " $\frac{3}{4}$ " " 9 00

RUBBER WASHERS FOR WATER GAUGES.

Price, per dozen..... $0 25

PIPE AND FITTINGS.

Size of Pipe. ..	⅛ in.	¼ in.	⅜ in.	½ in.	¾ in.	1 in.	1¼ in	1½ in.	2 in.	2½ in.	3 in	3½ in.
Black, per foot.. Galvani'd, per ft.	$0 05½	$0 05½	$0 05½	$0 08½	$0 11½	$0 16½	$0 22½	$0 27	$0 36	$0 57½	75½	$0 95
Cutting threads, per thread.....	5	5	5	5	5	6	7	8	10	15	20	25

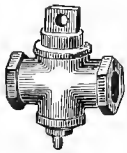
Size of Fittings in inches.	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½
Elbows												
Black cast, R. H ...	...	$0 05	$0 05	$0 06	$0 08	$ 10½	$0 16	$0 20	$0 28	$0 56	$0 75	$1 05
Galvanized cast, R. H	...	10	10	12	16	21	32	40	56	1 00	1 50	2 10
Black malleable, R. H	$0 04	4	6	10	15	12	20	35	50	80	1 50	2 25
Black ca t, reduciug	....	....	....	7	9	12	18	23	32	60	85	1 20
Black cast, R & L ...	...	6	6	7	9	12	18	23	32	60	85	
Black cast, 45°	....	....	6	7	10	12	19	24	34	60	90	1 25
Black malleable street	...	10	10	12	20	25	40	55	90	1 50	....	...
Galvanized " "	...	12	12	15	28	35	55	80	1 30	....	....	....
Return Bends												
Black cast, open R H...	...	....	....	...	26	30	40	55	80	1 35	2 20	....
" " " R & L...	....	....	....	....	30	35	46	64	92	1 55	2 50	....
" " close R. H...	....	....	....	18	20	22	28	40	57	1 20	1 70	....
" " " R & L...	....	....	...	21	23	26	33	46	66	1 40	1 95	....
Tees												
Black cast.....	....	8	8	9	12	15	23	29	41	73	1 10	1 50
Galvanized cast.....	....	16	16	18	24	30	46	58	82	1 46	2 20	3 00
Black malleable.....	7	7	8	11	15	25	30	45	60	1 50	1 70	2 50
Black cast, reducing..	....	....	....	10	14	17	27	33	47	83	1 25	1 75
Crosses												
Black cast	....	...	15	16	22	27	42	53	75	1 30	2 00	2 70
Galvanized cast	...	....	30	32	44	54	84	1 06	1 50	2 60	4 00	5 40
Black cast, reducing	...	....	....	18	25	30	46	60	83	1 45	2 20	3 00
Unions												
Black malleable	18	18	20	22	27	33	46	58	75	1 55	2 10	3 65
Galvanized malleable	27	27	30	33	40	50	70	90	1 15	2 35	3 15	5 50
Black cast flanged. rubber g sket.....	...	....	....	40	46	52	64	78	1 00	1 25	1 50	1 80
Galvanized cast. flang ed, rubber gasket ...	...		....	80	92	1 04	1 28	1 56	2 00	2 50	3 00	3 60
Nipples												
Black, close or short .	4	4	4	5	6	8	11	13	18	30	48	75
Galv'd, close or short.	Add	60 pe	r ce	nt to	Bla	ck L	ist f	or G	alva	niz'd	List	
Black, long	6	6	6	7	9	13	17	20	27	59	72	1 05
Galvanized, long	Add	60 pe	r ce	nt to	Bla	ck L	ist f	or G	alva	niz'd	List	
Couplings												
Black wrought.....	5	5	6	7	10	13	17	21	28	40	60	80
Galvanize t wrought.	6	6	8	10	13	18	25	32	40	55	80	1 05
Black wr'g't, R & L...	7	7	8	11	15	20	25	30	50	85	1 20	1 80
Bl'k mall'ble R & L. .	...	4	5	8	12	16	25	36	52	....	....	....
Galvanized malleable R. & L.....	....	6	6	10	17	25	35	55	75	....	....	....
Reducers												
Black malleable.....		3	3		10	16	20	28	45	70	1 00	1 50
Galvan zed malleable	..	....	....	8	15	25	35	45	75	1 05	1 65	2 40
Plugs												
Black cast.....	.. 2	2	2	2	3	4	5	7	10	18	25	38
Galvanized cast.....	....	4	4	4	6	8	10	14	20	36	50	76
Caps												
Black malleable.....	....	3	4	5	8	12	16	24	32	45	85	1 00
Galvanized malleabl.	....	4	5	8	12	17	24	38	52	76	1 30	1 60
Bushings												
Black cast	..	....	4	4	5	6	7	9	14	21	30	40
Galvanized cast.....	....	....	8	8	10	12	14	18	28	42	60	80
Black malleable		4	4	4	5	6	7	9	14	21	....	....
Galvanized malleable.	.. .	8	8	8	10	12	14	18	28	42	....	....
Lock Nuts												
Black malleable	....	2	3	4	5	7	9	11	18	....	....	....
Galvanized malleable.	....	3	4	5	7	10	14	20	30	....	....	....

PIPE FITTINGS

COCKS

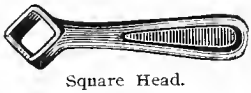
Steam Sq. Head.

3-way Sq Head.



Steam or Water Flat Head

COCK WRENCHES



Square Head.

Flat Head.

Size of Fittings in Inches	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Cocks										
Steam or Water Sq. or Flat Head	$0 85	$1 00	$1 25	$1 70	$2 35	$3 70	$4 85	$ 7 30	$14 50	$22 50
3-way Square Head	.....	.....	2 50	3 00	3 75	5 75	7 15	11 00	18 75	26 00
Cock Wrenches										
Black malleable Sq. Head	.....	.....	7	9	14	19	25	44	56	56
Black malleable Flat Head	.....	.....	7	9	14	25	44	56	1 00	1 00

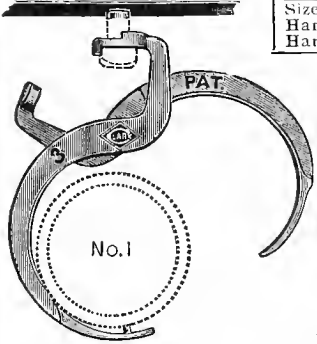
EXPANSION PIPE HANGERS

Size of Pipe	⅜	½	¾	1	1¼	1½	2	2½
Hanger Without Bolt	.08	.08	.10	.12	.14	.16	.20	.24
Hanger with Nut and Bolt	13	.13	.15	.17	.19	.25	.20	.33

Size of Pipe	3	3½
Hanger Without Bolt	.28	.34
Hanger with Nut and Bolt	.37	.45

THE CLARK PIPE HANGER

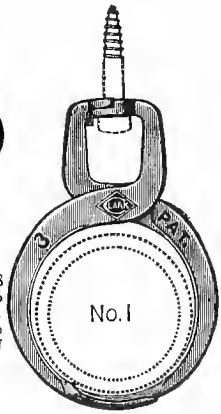
Swings in any Direction with the Expansion of Piping.



PLATES

Floor.

Ceiling.

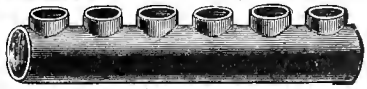


PRICE EACH

Size	½ in.	¾ in.	1 in.
Floor	$0 6	$0 06	$0 08
Ceiling	11	13	16
Size	1¼ in.	1½ in.	2 in.
Floor	$0 11	$0 14	$0 16
Ceiling	18	23	27

BEAM HOOKS

¾ in.	1 in.	1¼ in.	1½ in.	2 in.
$0 15	$0 18	$0 22	$0 24	$0 35



BRANCH TEES

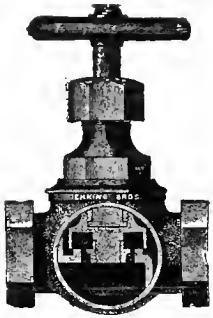
Number of branches	2	3	4	5	6	7	8	10	12
Size, pipe, 1 in. inside diam. 1¾ in.	$0 90	1 05	1 15	1 35	1 60	1 90	2 20	3 15	4 40
" " 1¼ " " " 2½ "	1 30	1 65	2 00	2 40	2 80	3 20	3 60	4 80	5 25
" " 1½ " " " 2¾ "	2 10	2 70	3 35	4 00	4 65	5 25	5 85	7 60	8 50

HOOK PLATES

No. of Hooks	1	2	3	4	5	6
For ¾ inch pipe, 2 inches between centers, expansion	$0 12	23	34	45	55	65
" 1 " " 2½ " " " "	15	25	35	50	60	70
" ¾ " " 2 " " " plain	08	16	21	24	28	34
" 1 " " 2½ " " " "	09	18	23	26	32	38

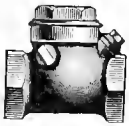
VALVES

RENEWABLE VULCANIZED ASBESTOS DISC VALVE



Globe.

Disc and Holder complete.



P. & C. Check.

Sectional view Disc Holder.

Angle.

These valves are provided with Vulcanized Asbestos Discs, composed of the fibre of asbestos, to which is added—by patented process—the waterproof vulcanizing material, making a very durable packing, which will not crack or flake off. They are held in a central position by guides cast on the valve body, and have no nuts, screws or pins which can become detached in use. The discs are furnished in brass holders, ready for use, and can be put in place by simply removing the bonnet of the valve, slipping a new disc on the end of spindle and replacing the bonnet again, without loss of time or need of skill.

PRICE LIST

Size, inches	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Globe and angle valves, brass, screwed	$1 10	1 10	1 25	1 60	2 20	2 80	4 00	5 50	8 75	15 75	22 00
Same for medium heavy pressure	.....	.....	.....	2 10	2 95	3 65	5 25	7 50	10 00	19 50	27 00
Same, flanged	.....	.....	.....	.....	.....	6 00	9 00	11 00	16 50	25 00	34 00
P & C Straightway swinging check, brass, screw'd	.....	1 25	1 25	1 30	1 75	2 25	3 25	4 25	6 25	11 50	16 00

EXTRA ASBESTOS DISCS AND HOLDERS

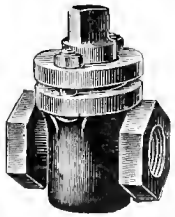
Size, inches	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Disk and holder complete for globe & angle valves	$0 13	14	07	09	10	12	18	25	36	48	60

Prices of ⅛ and ¼-inch discs include spindles, as disc holder and spindle are one piece.

LUNKENHEIMER'S HANDY GATE VALVES.

With Screwed Ends Only.

Size, inches	½	¾	1	1¼	1½	2	2½	3
Price, brass body	$1 60	1 80	2 50	3 50	5 00	7 50	13 50	19 00
Price, iron body brass mounted	.....	3 40	4 00	4 50	6 00	7 00	12 00	15 00
Price, all iron	.....	.....	.....	....	.....	7 00	12 00	15 00



VULCANIZED ASBESTOS PACKED IRON COCKS

For Boiler, Blow-off, Water Columns, Etc.

Size, inches	⅛	¼	⅜	½	¾	1	1¼	1½
Price	$1 30	1 30	1 45	1 60	2 10	2 50	3 50	4 75

Size, inches	2	2½	3	3½	4	5	6
Price	$7 00	12 00	18 00	27 00	30 00	45 00	60 00

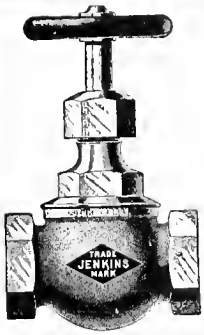
COCK WRENCHES—Malleable Iron

For all styles of Cocks

Size, inches	½	¾	1	1¼	1½	2	2½	3
Number	3	4	5	6	7	8	9	10
Price, each	$0 07	09	14	19	25	44	56	1 00

VALVES

"JENKINS' BROS."



GLOBE

CHECK

ANGLE

JENKINS' DISC GLOBE, CHECK AND ANGLE

Size, inches	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Globe and angle valves, brass	$1 10	1 25	1 60	2 20	2 80	4 00	5 50	8 00	15 75	22 00
Globe and angle valves, flanged	....	....	....	....	6 00	9 00	11 00	16 50	25 00	34 00
Check valves	1 10	1 20	1 30	1 90	2 60	3 60	5 00	7 50	13 50	20 50

"JENKINS'" DISCS

Size, inches	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Price	$0 03	0 04	0 04	0 05	0 06	0 09	0 12	0 18	0 24	0 33

NOTE.—To save delay, ALWAYS send sample of disc required.

"POP" SAFETY

STATIONARY, PORTABLE AND FARM ENGINE STYLE

¾	inch, for boilers,	3 to 6	horse power			$10 00
1	" " "	3 to 10	"	"		12 00
1¼	" " "	10 to 20	"	"		15 00
1½	" " "	20 to 30	"	"		20 00
2	" " "	30 to 40	"	"		30 00

"BALL" SAFETY

Size, inches	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Brass Body	$2 20	2 50	3 25	3 90	4 70	7 15	9 00	12 50	....	....
Iron "	....	....	....	....	4 00	5 00	5 80	7 80	13 25	17 25

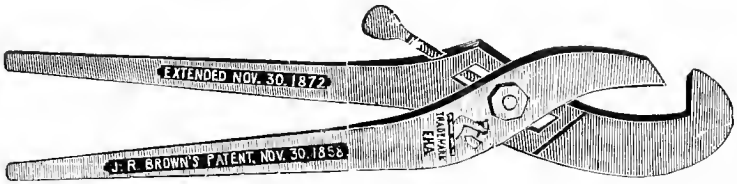
"COMMON" BRASS

GLOBE, CHECK AND ANGLE

Size, inches	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Price, Check, each	$0 65	0 70	0 90	1 15	1 60	2 25	3 15	4 75	9 00	13 00
" Globe or angle	72	77	1 00	1 26	1 80	2 52	3 50	5 30	10 00	14 40

PIPE TONGS

"BROWN'S" ADJUSTABLE

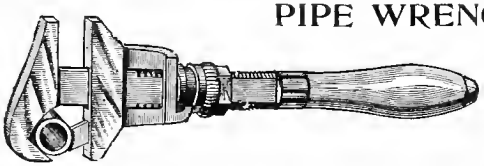


Number	1	1½	2	3	4	5
Takes pipe from	⅛ to ¾	⅜ to 1	½ to 1¼	1 to 2	1½ to 3	2½ to 4
Price, each	$1 30	$1 65	$2 00	$3 00	$6 00	$11 00

"COMMON"

Sizes, inches	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½
Price, each	$0 60	$0 65	$0 70	$0 75	$0 90	$1 10	$1 30	$1 50	$1 90	$2 50

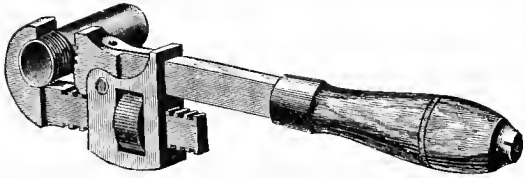
PIPE WRENCHES



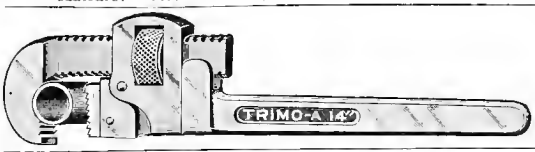
"BEMIS & CALL'S" COMBINATION PIPE AND NUT

Length, inches	6	12	15
Takes pipe, inches	⅛ to ½ in.	¼ to 1½ in.	¼ to 2 in.
Price, each	$2 00	$2 50	$4 00

"STILSON'S" PATENT



Length, inches	6	8	10	14	18	24	36
Size pipe, inches	⅛ to ½	⅛ to ¾	⅛ to 1	¼ to 1½	¼ to 2	¼ to 2½	½ to 3½
Price, each	$2 00	$2 00	$2 25	$3 00	$4 00	$6 00	$12 00
" Jaws	67	67	75	1 00	1 33	2 00	40
" Frames	25	25	33	45	55	65	75
" Nuts	20	20	27	35	42	50	65
" Handle	15	15	20	25	30	40	50

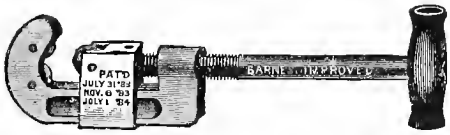


"TRIMO"

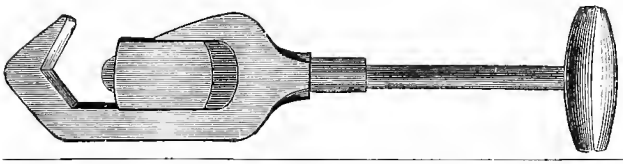
Length, inches	6	8	10	14	18	24
Takes pipe, inches	⅛ to ½	⅛ to ¾	⅛ to 1	¼ to 1½	¼ to 2	¼ to 2½
Price, each	$2 00	$2 00	$2 25	$3 00	$4 00	$6 00
" Jaws	67	67	75	1 00	1 35	2 00
" Inserted jaws	25	25	35	50	55	65
" Nuts	20	20	30	35	45	50
" Frames	25	25	25	35	55	65

PIPE CUTTERS

THE "BARNES" PIPE CUTTER



Numbers	1	2	3	4	5
Cuts pipe from	⅛ to 1	½ to 2	1½ to 3	2½ to 4	4 to 6
Complete cutter, each	$4 50	$6 00	$10 00	$20 00	$30 00
Extra wheels, "	25	30	40	50	75
" wheel pins, "	10	10	15	15	20

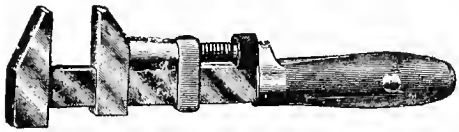


THE "STANWOOD" PIPE CUTTER

Numbers	1	2	3
Cuts pipe from	⅛ to 1	1 to 2	2 to 3
Complete cutter, each	$1 50	$2 25	$7 00
Cutter wheels, "	12	18	25
" blocks and wheels, each	40	60	1 00
Pins, each	05	05	10

THE "SAUNDERS" PIPE CUTTER

Numbers	1	2	3
Cuts pipe from	⅛ to 1	1 to 2	2 to 3
Price, each	$3 00	$4 50	$11 00
Extra blocks and wheels, each	1 25	1 75	2 75
" wheels, each	24	32	60
" rollers, "	24	32	50
" pins, "	10	10	15



WRENCHES

"COE'S" MONKEY WRENCH

Size, inches	6	8	10	12	15	18	21
Price, black, each	$0 80	$0 85	$1 00	$1 15	$2 00	$2 50	$3 00
Polished "	85	95	1 15	1 35	2 25	2 65	3 25

"ALLIGATOR" WRENCHES

Numbers	1	2	3	4	5
Holds pipe from	⅛ to ⅜	⅜ to ¾	½ to 1¼	1¼ to 2	2 to 3 in.
Holds round iron from	¼ " ¾	½ " 1	¾ " 1⅜	1½ " 2½	2¼ " 3½ in.
Length, inches	5¾	10	16	22	27
Price, each	$0 35	$1 00	$2 00	$3 00	$4 50

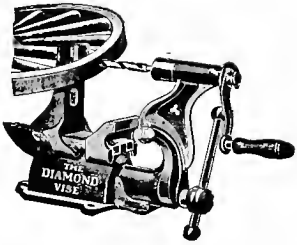
"DIAMOND" VISE

WITH DRILLING ATTACHMENT

To hold pipe move small jaw back one notch.

Cut threads on right side of Vise as shown herewith; pipe is then held more securely.

Three sharp jaws 4 in. long clamp pipe up to 2 in. firmer than any other vise.



This is a first class Vise for any machinist, and very convenient for all private workshops. It should be the general Vise for all dealers to carry in stock.

JAWS are faced with steel 7/8 inch wide, 4 inches long, firmly fastened to jaw and checked and hardened.

FACE of Anvil is 3 inches by 7 inches (not including horn) chilled, ground and polished, and polished surface covered with lacqner.

SCREW steel 3/4 inch by 10½ inches, 6½ threads to an inch, cut 7 inches on the screw. Head polished.

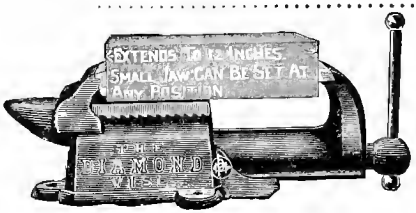
SCREW HANDLE is 9-16 inch by 9½ inch, steel polished.

NUT is ingeniously formed of cast iron 1¼ inches thick so as to guide jaw, also remains in a firm position.

VISE weighs 38 lbs. Boxed, weighs 42 lbs. Painted green where not polished.

DRILL ATTACHMENT weighs 13 lbs. Boxed, weighs 15 lbs.

Price, without Drill Attachment.....$3 00
" with " " 5 00



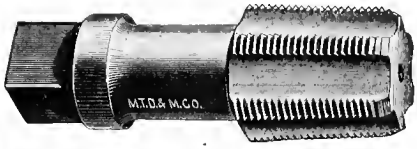
REED'S GAS PLIERS.

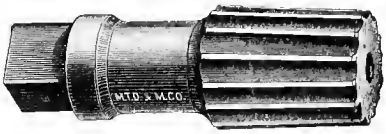
Combined Plier, Wire Cutter and Screw Driver.

LIST.

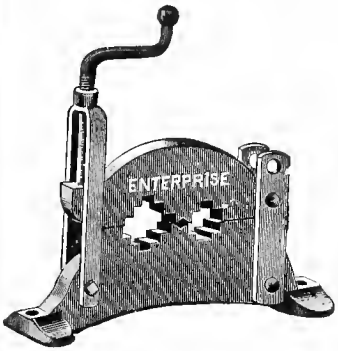
	Black.	Nickel.
6-inch, per dozen	$13 50	$15 00
8 " "	16 00	18 00
10 " "	18 00	21 00

PIPE TAPS AND REAMERS





Size, inches.....	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Pipe Tap,....each,	$1 12	1 25	1 50	1 87	2 50	3 12	3 75	4 62	6 25	10 50	15 00
Pipe Reamer.each,	$1 12	1 25	1 50	1 87	2 50	3 12	3 75	4 62	6 25	10 50	15 00



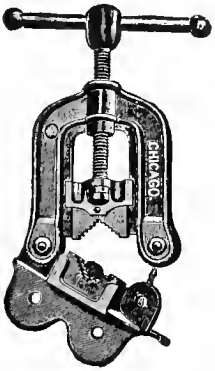
PIPE VISES

THE "ENTERPRISE" IMPROVED

This pipe vise is adapted for all sizes, from ⅜-rod to 2-inch pipe. We believe this to be the cheapest and most convenient pipe vise in use. It may be bolted to a bench, but when for portable use should be fastened to a 2x3-inch plank from 2½ to 3 feet long. It will be found very useful by pump men for suspending the pipe from the platform while screwing the parts together, especially in deep wells. No pump man should be without it.

PRICE

Each.....$3 00



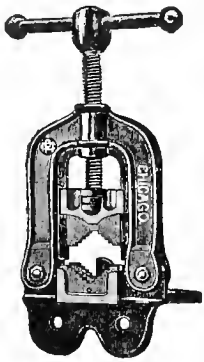
OPEN

THE "MALLEABLE"

WITH HINGE

SIZES AND PRICES

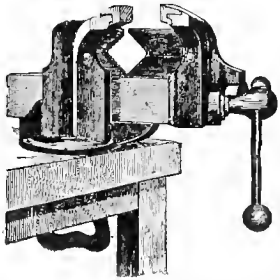
No. 1 holds pipe from ⅛ to 2 inches, $10 00
" 2 " " " ⅛ " 3 " 14 00



CLOSED

THE "COMBINATION."

No.....	87	88	88½	89½
Holds pipe from, inches.....	⅛ to 2	⅛ to 3	⅛ to 4	⅛ to 6
Price, each.....	$16 00	20 00	28 00	35 00



DIE STOCKS

GAS PIPE

"ASHCROFT STANDARD"

FOR WROUGHT IRON OR STEEL PIPE

SIZES AND PRICES

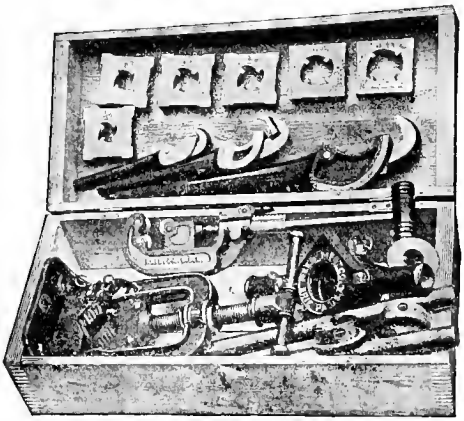
Numbers	0	1	1½	1¾	2	3
Pipe sizes of dies, inches, furnished with each Stock	⅛,¼,⅜,½	¼,⅜,½,¾,1	¾, 1, 1¼	1, 1¼, 1½	1¼, 1½, 2	2½, 3
Dimensions of dies, inches	2x½	2½x¾	3x¾	3x¾	4x⅞	5x1¼
Stocks, complete, with right or left-hand dies	$9 50	$15 00	$13 50	$13 50	$20 00	$43 00
Stocks only	3 50	5 00	6 00	6 00	9 50	25 00
Extra dies, right or left hand	1 50	2 00	2 50	2 50	3 50	9 00
" bushings	25	35	45	45	60	1 00
" die frames	25	30	40	40	50	60

NOTE.—With our No. 2 stocks 4x⅞ dies are always sent unless otherwise ordered. Nos. 2 and 3 stocks have leader screw attachment.

Following is a complete set and prices of extras used in making-up au Ashcroft Standard Gas Pipe Die Stock, from ¼ to 2 inches.

1 No. 2 die stock	$20 00
1 die frame	50
5 dies, $2.00 each	10 00
5 bushings, 60c. each	3 00
	$33 50

COMBINATION PIPE TOOL SETS.



No. 1, containing: One pipe vice, ⅛-in. to 2-in.; one pipe stock and dies, ¼-in., ⅜-in., ½-in., ¾-in. and 1-in.; one pipe cutter, ¼-in. to 1¼-in.; one No. 8 Reed wrench, ⅛-in. to ¾-in.; one No. 11 Reed wrench, ¼-in. to 1-in.; one No. 16 Reed wrench, ⅜-in. to 1½-in.

Price complete, with chest.....$30 00

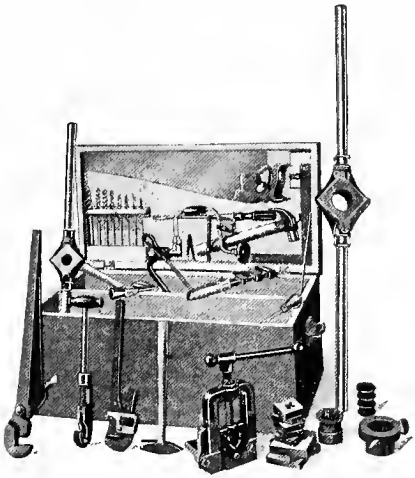
No. 2, containing: One pipe vice, ⅛-in. to 2-in.; one pipe stock and dies, ¼-in., ⅜-in.; ½-in., ¾-in., 1-in., 1¼-in. and 1½-in.; one pipe cutter, 3-in. to 2-in.; one No. 8 Reed wrench, 8-in. to ¾-in.; one No. 11 Reed wrench, ¼-in. to 1-in.; one No. 16 Reed wrench, ⅜-in. to 1½-in.; one No. 20 Reed wrench, 1-in. to 2-in.

Price complete, with chest.....$40 00

No. 3, containing: one pipe vice, ⅛-in. to 2-in.; one pipe stock and dies, ¼-in., ⅜-in., ½-in., ¾-in. to 1-in.; one stock and dies, 1¼-in., 1½-in. and 2-in.; one pipe cutter, ⅜-in. to 2-in.; one No. 8 Reed wrench, ⅛-in. to ¾-in.; one No. 11 Reed wrench, ¼-in. to 1-in.; one No. 16 Reed wrench, ⅜-in. to 1½-in.; one No. 20 Reed wrench, 1-in. to 2-in.

Price complete, with chest.....$50 00

BUTTER MAKERS TOOL CHEST.



In fitting up this tool chest we have tried to include all the tools that will be found useful around a creamery. The list will be found to contain just about the usual outfit included in the equipment of a first class creamery plant. In most creameries these tools will be found scattered from one end of it to the other. As a result when a tool is wanted it cannot be found. When found it is rusty and out of order. When kept in this chest the tools will always be easy to locate and will be kept in good condition. The chest is nicely finished and painted to correspond to our other creamery goods. We make no charge for the chest. Our price covers just the regular prices of the goods included in the outfit.

LIST OF TOOLS AND PRICE.

1 12-inch Square.
1 Barber Brace.
1 No. 2 Stock and Dies.
1 No. 1 Stock and Dies.
1 No. 2 Barnes Pipe Cutter.
1 12-inch Coes Monkey Wrench.
1 18-inch Stillson Wrench.
1 No. 1 Malleable Pipe Vice.
1 24-inch Cross Cut Saw.
1 18-inch Screw Driver.
1 Claw Hammer.
1 Riveting Hammer.
1 Hatchet.
1 6-inch Cold Chisel.
1 12-inch Hack Saw.
1 No. 3 Barnes Pipe Tongs.
1 Set 8 Bits.

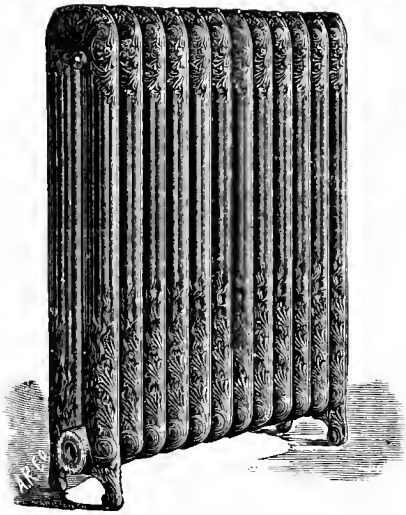
Price, complete with Chest, $45.00.

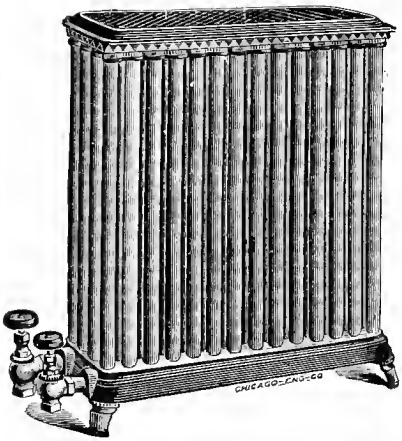
RADIATORS

CAST IRON

These Radiators all have a uniform width of 7¼ inches in body and 9¼ inches at foot.

Heating surface in each radiator section.	Steam. Price, per foot.	Hot water. Price, per foot.
38 inches high, 4 feet ..	$ 0 42	$ 0 42
32 " " 3⅓ " ...	46	46
26 " " 2⅔ " ...	49	49
23 " " 2⅓ " ...	53	53
20 " " 2 " ...	57	57





WROUGHT IRON

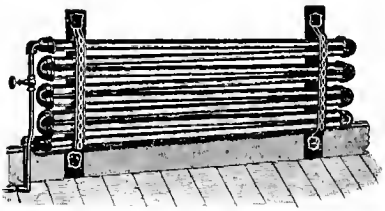
Two rows.	Length.	Height inches.	Width, inches
8 tubes 2x 4.....	11¼ in.	34¼	6¾
12 " 2x 6.....	1 ft. 3½ "	34¼	6¾
16 " 2x 8.....	1 " 7¾ "	34¼	6¾
20 " 2x10.....	2 "	34¼	6¾
24 " 2x12.....	2 " 1¼ "	34¼	6¾
32 " 2x16.	3 " ¼ "	34¼	6¾
40 " 2x20.....	3 " 9¼ "	34¼	6¾
48 " 2x24.....	3 " 5¾ "	34¼	6¾
56 " 2x28.....	5 " 2¼ "	34¼	6¾
64 " 2x32.....	5 " 10¾ "	34¼	6¾

These radiators are quite expensive and seldom used at present. We can supply them if desired. Prices quoted on application.

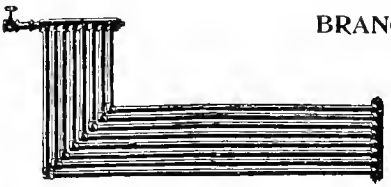
BRACKET COIL

6 PIPES HIGH.			8 PIPES HIGH.		
Length in feet.	Price, per foot 2 pipes wide.	Price, per foot 1 pipe wide.	Length in feet.	Price, per foot 2 pipes wide.	Price, per foot 1 pipe wide.

These coils are made to order.
Prices quoted on application.



BRANCH WALL



The accompanying cut shows our Branch Wall Radiator. This has a perfect drain and is an excellent and inexpensive heater. It contains 8 pipes.

Prices quoted on application.

No valves furnished with any radiators or steam coils.

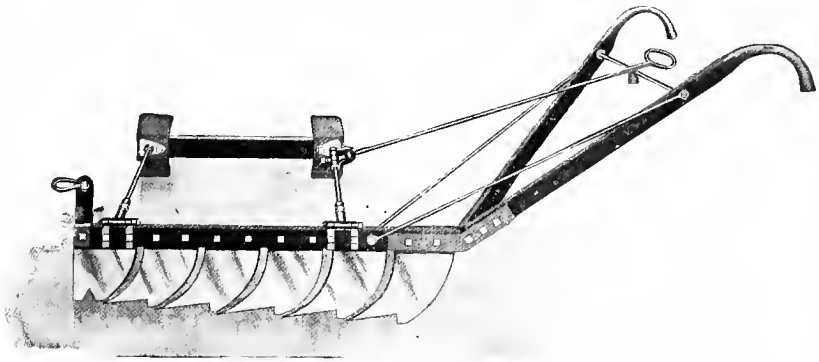
ICE TOOLS.

PLOWS.

Hand plow			$15 00
Marker, with guide, complete			58 00
6 inch plow, with guide, complete	$50 50	without guide,	42 00
8 " " " " "	56 50	" "	48 00
9 " " " " "	59 50	" "	51 00
10 " " " " "	61 50	" "	53 00
12 " " " " "	66 50	" "	58 00
14 " " " " "			65 00
Snow ice plane			38 00

RED, WHITE AND BLUE ICE PLOW.

THE BANNER PLOWS.



LOW PRICES. GOOD QUALITY. PATENT CLEANING TOOTH.

For dairies, hotels, butchers, farmers and cutters generally, who want a low priced implement, combined with material, workmanship and finish all of the first class. These plows are put up in exactly the same manner and by the same workmen as the expensive plows, and they will stand up steadily to the work. It it not possible to satisfactorily cut ice more than one groove at a time, and no experienced ice cutter will employ any other style of plow than the above. Each plow is painted in the best manner and furnished with a case to cover the teeth. A filing gauge is also furnished with each plow. Two sizes are offered this year, cutting respectively to a total depth of 7¼ and 9 inches. The plows are set to cut 1¾ to 2 inches deep at each passing. Improved cleaning tooth, is always demanded on high priced plows and these are the only low priced plows that carry this important feature. This clears the groove of the chips and the cutting teeth follow in a clear channel, with no packing or binding. Swing guide combines the plow and Marker, and after the field is marked off on the first round the guide should be taken off and laid aside. The swing guide is rigged to mark 22 inches, unless otherwise ordered. Adjustable swing guide, admitting of marking the field 16, 18, 20 and 22 inches is furnished at an additional charge.

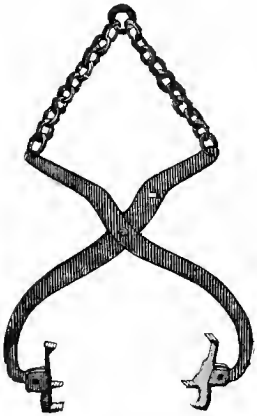
PRICES.

7¼ inches, with improved clearing tooth and 22 inch swing guide	$25 00
9 inch, with improved clearing tooth and 22 inch swing guide	30 00
Adjustable swing guide for marking 16, 18, 20 and 22 inches, extra	1 50
Swing guide for wider markings, extra	1 00

ICE TOOLS

ICE SAW.

Ice saw, four feet	$4 50
" four and one-half feet	4 75
" five feet	5 00
" " and one-half feet	6 50

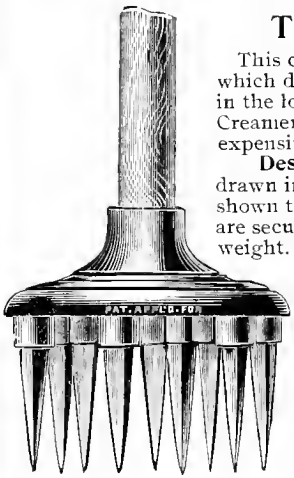


LOWERING TONGS.

Price, 17-inch	$1 75
" 24 "	2 00
" 24 " Double Points	2 75

HOISTING TONGS.

Hoisting tongs, with patent Claw	$6 00
" " " Claw Points	4 50



THE AMERICAN ICE CRACKER

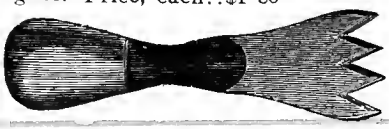
This cut shows the "business" end of the American Ice Cracker, which during the past three years has made an enviable record in the localities where it has been in use. Just the thing for Creameries, Ice Cream Factories and Dairies. Durable and inexpensive.

Description. The points are made of ½-inch tool steel, drawn into triangular points and tempered as experience has shown to give the best results. The head into which the points are securely fastened and socket for handle are of cast iron, for weight.

Operation. Place the ice in the box and then use the cracker to reduce it to the size required.

Advantages. One man or boy can do more in making ice fit for the freezer or packing purposes than two men can with axes or sledges, and with little waste in the form of snow ice. The size of the pieces will be uniform, and the fineness depends on the time they are subjected to the action of the cracker. The labor of using the cracker is far less than any previous mode of crushing ice. **Price, each..$1 50**

ICE CHISELS



Ice chisels.....each, $0 50

ICE TOOLS

CALKING BAR

Calking Bar (wooden handle).....$2 50

HEAVY FORK BAR

Heavy Fork Bar, two tines.....$4 25
Fork Bar, three tines..... 4 00
" " four tines..... 4 25

RING-HANDLE SPLITTING BAR

Ring-handle Splitting Bar.....$2 50
Needle Bar, with Wooden Handle..... 2 00
Ring-handle Needle Bar, with Iron Handle..... 2 00

SPLITTING CHISEL

Extra long Blade, specially adapted for this purpose Knob Handle.....$2 25
Line Marker..... 90

ELEVATOR FORK

Elevator Fork.....$1 50

CHANNEL HOOK CHISEL

Channel Hook Chisel.....$3 00
Scoop Net..... 3 00
Wire Snow Shovel..... 1 75
Plow Line..... 1 50

FLOOR CHISEL

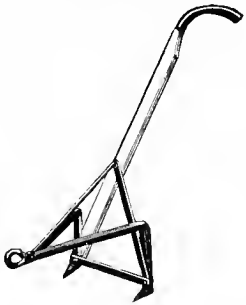
Floor Chisel.....$3 25

ICE CHISEL

Steel Blade, 3-Foot Wood Handle.....each, $1 00

ICE TOOLS

GRAPPLE.



Grapple with handle	$4 25
Channel Grapple with twelve foot rope	4 25
Jack Grapple	4 25

BREAKING-OFF BAR.

Breaking-off bar	$3 25

SOLID CAST STEEL ICE HOOKS.

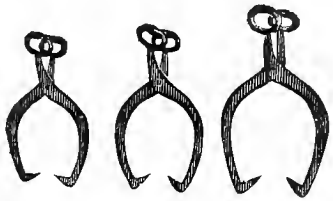
Four feet handles	each,	$ 0 80
Four and one-half feet handles	"	80
Five feet handles	"	85
Six " "	"	85
Eight " "	"	1 10
Ten " "	"	1 20
Twelve feet "	"	1 25
Fourteen " "	"	1 30
Sixteen " "	"	1 35
Turned Ash Ice Hook Handles, four feet	"	15
" " " " " four and one-half feet	"	20
" " " " " five feet	"	20
" " " " " six feet	"	30
" " " " " seven feet	"	25
" " " " " eight feet	"	30

ICE ADZ.

Ice Adz	$4 00
Chisel Bar	3 25
Striking-under bar	3 25

ICE TOOLS

REVISED PRICE LIST OF ICE TONGS.



Steel tongs, swell handle, span 14½ in.	each,	$1 20
" " " " " 16½ "	"	1 25
" Loading tongs, span 24 inches	"	1 45
Hollow handle tongs, span 16½ inches	"	2 00
Edging-up tongs, steel	"	1 50
Chain handle tongs	"	1 40
Dredging tongs	"	1 75

CHISEL BAR.

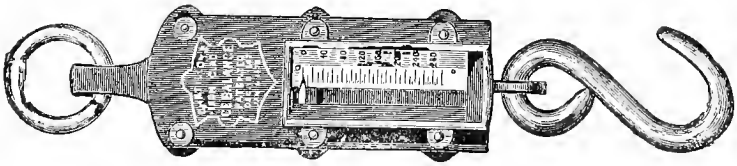
Chisel bar $3 25

ICE AXE.

CHEST HATCHET.

Ice axes,	each,	$1 75
Chest hatchets,	"	1 00

IRON CLAD ICE SCALES.



To weigh 200 x 5 lbs.	$3 00
" " 300 x 5 "	3 50
" " 400 x 5 "	4 00

INDURINE COLD WATER PAINT.

WEATHERPROOF.

Indurine is a Pure Mineral Paint in dry powder form, requiring the addition of cold water only to be ready for instant use; produces a hard flexible, enamel finish, capable of withstanding great weather exposure. Will not rub, scale or crack, nor soften, nor turn yellow with age. Can be applied by anyone with any kind of a brush. Absolutely Fireproof.

Indurine is the paint for factory plants, station and hospital buildings, shop, water stations, boiler and engine rooms, dry kilns, bridges and trestles, cattle guards, fences, out-houses, green-houses, and all classes of wood or brick buildings, or any place where it is desirable to retard fire, and decay, or where light and cleanliness are required.

Indurine is 75 per cent cheaper than lead and oil paint; creating a saving not only in material, but in labor. One coat of Indurine covers better than two coats of oil paint, and in most cases only one coat is necessary.

Indurine can be used over oil paint, and in fact, forms an excellent filler for old weather-beaten surfaces which consume an immense amount of paint. One coat of Indurine will effectually stop the greatest suction, and it will also resist dampness in rooms to a remarkable degree.

We especially recommend Indurine for interior of creameries as it is odorless and positively cannot taint the product in any way. Thus enabling the owner to repaint at any time, without stopping work or incurring any risk.

DIRECTIONS.

To two parts of powder add slowly one part cold water. This will form a thick paste which must be stirred thoroughly until all lumps are removed. Then thin down by adding slowly more water, a little at a time, stirring constantly until the mixture is of the consistency of good thick cream or oil paint, being careful not to get the mixture too thin. It is then ready for use. When applying brush it on well like oil paint.

WHITE.

Waterproof, per pound	8 cts.
Extra Inside, "	7 cts.

COLORS.

WATERPROOF.	PER LB.	INTERIOR.	PER LB.
No. 30-62-26-36	9 cts.	No. 71-76-81	8 cts.
No. 54-35-64	9¼ cts.	No. 41-45-47	8¼ cts.
No. 31-32-56-3334-65	9½ cts.	No. 40-46	8½ cts.
No. 37	9¾ cts.	No. 39-42-43-77-79-68-44	8¾ cts.
No. 38	10 cts.	No. 80	9 cts.
No. 58	10¼ cts.		

Put up in Barrels, about	400 lbs.	
Half Barrels	200 lbs.	
Kegs	100 lbs.	½c. over above prices.
Kegs	50 lbs.	½c. over above prices.

Also in cases containing 20 .5-lb. packages. Put up in this way, 1 ct. per pound additional (over above prices) to cover expense of labor, packages, etc.

Covering Capacity.

5 lbs. make a gallon.

One pound (dry) will cover approximately 20 to 40 square feet on rough surface such as stone, brick or unplaned boards.

On planed boards one pound (dry) will cover 40 to 80 square feet.

PAINTS

PAINT YOUR BOILER FRONT....

SMOKE STACK
STEAM PIPES
AND ALL **IRON WORK..**

WITH....

Elliott's Hot Water and Acid Proof Enamel

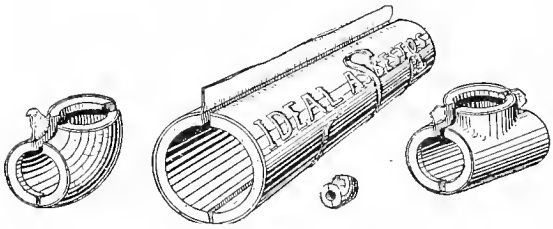
It will not only add to its appearance but will prevent rust and so lengthen the life for this purpose.

ELLIOTT'S IRON ENAMEL

is the standard paint for every kind of iron work. It gives a beautiful black, lustrous finish; very durable, always ready. The longer you keep it the better it is. If by age or exposure it grows too heavy, thin with turpentine or benzine.

1 Gallon Can	$ 1 00
5 " "	4 50
10 " "	8 50
½ Barrel, about 30 Gallons	23 50
1 " " 50 "	38 50

"IDEAL" ASBESTOS SECTIONAL MOULDED COVERING



For all Sizes of Steam and other Pipes

This covering is composed of Asbestos and other absolutely fire proof, non-conducting materials. It is moulded in three-foot sections to fit all regular sizes of pipes, with moulded Ells, Tees, Valves, etc. It has an outer covering of canvas which is encircled by metal straps to hold it firmly on the pipes. It is easily put on by unskilled workmen, and can be readily removed and re-applied. This covering is unsurpassed for high pressure steam pipes.

PRICE LIST

For Pipe Coverings

Inside Diam. of Pipe	Outside Diam. of Pipe	Price per Lineal Foot
½-inch	⅞-inch	20 cents
¾ "	1⅛ "	22 "
1 "	1⅜ "	23 "
1¼ "	1⅝ "	24 "
1½ "	1⅞ "	25 "
2 "	2⅜ "	27 "
2½ "	2⅞ "	31 "
3 "	3½ "	36 "
3½ "	4 "	40 "

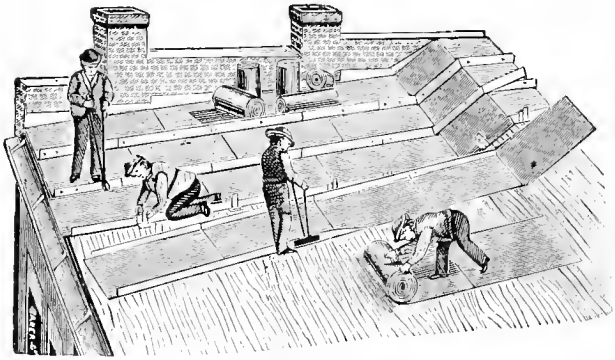
PRICE LIST

For Fitting Coverings

Size Inside Diam.	Ells mo'ld'd	Tees mo'ld'd	Valves mo'ld'd	45° Ells mo'ld'd
½ and ¾-in.	25c.	33c.	25c.	25c.
1 "	25c.	33c.	25c	25c.
1¼ "	25c.	33c.	25c.	25c.
1½ "	25c.	33c.	25c.	25c.
2 "	27c.	36c.	27c	27c.
2½ "	31c.	41c.	41c.	31c.
3 "	36c.	48c.	48c.	36c.
3½ "	40c.	53c.	53c.	40c.
4 "	44c.	59c.	59c.	44c.

ROOFING.

For Creameries, Cheese Factories and Dairies.



"SYKES" PATENT STANDING SEAM STEEL ROOFING

Most Economical, Safest and Best.

This cut shows our "Sykes" Patent Standing Seam Steel Roofing. This is all we claim for it, and is considered by all who have used it to be the most economical and in every way satisfactory Roofing obtainable. It is especially well adapted for use on creameries, cheese factories and dairies. The price, given per 100 square feet, includes everything to complete the job, such as nails, caps, cleats, dry paint for a second coat when laid, etc. We send with each order printed instructions, and loan you a set of our special tools free of charge, so that anyone can make a first-class job of it without previous experience.

Price per 100 square feet.....$....

Corrugated Iron.

Two and one-half inch Corrugated Iron is the standard gauge in use for roofing, and also sometimes used for siding. The sheets are 26 inches wide, and cover 24 inches, with one corrugation for sidelap. Sheets can be furnished in 6, 7, 8, 9 and 10 feet length.

Price per 100 square feet .....$....

Corrugated Iron.

The sheets are 25¼ inch wide, and cover 24½ inch with one corrugation for sidelap. Sheets can be furnished in 6, 7, 8, 9 and 10 feet length. This is used for siding, as the small corrugation makes the sheets a little stiffer than the 2½ inch, and we think makes a neater job. It is also largely used for ceiling, and is well liked for this purpose.

Price per 100 square feet.....$....

Beaded Ceiling and Siding.

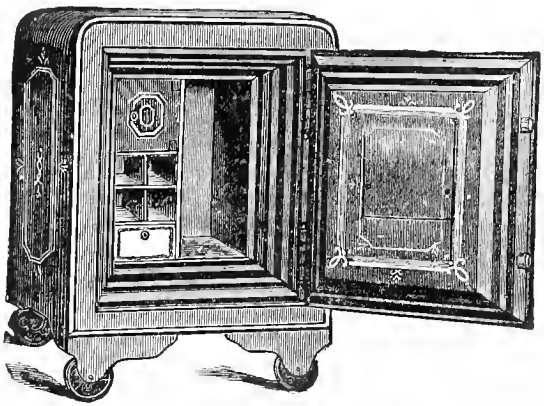
Sheets when beaded cover 24 inches from center to center of outside beads. Sheets are 8 feet long. The beads are small corrugations, ⅜ inch deep and 3 inches apart. This makes a very sightly and substantial ceiling, and is easily and readily applied.

Price per 100 square feet.... ..... $....

Prices furnished on application

OFFICE FIXTURES FOR CREAMERIES AND CHEESE FACTORIES

SAFES



No. 1. DIMENSIONS

Outside measure	18 11½ x 12 inches
Inside measure	10½ 7⅜ x 8 "
Approximate weight	125 pounds
Price	$17.50
" with inside door	22.50

No. 2. DIMENSIONS

Outside measure	24 x 16 x 15 inches
Inside measure	13 x 9 x 8½ "
Approximate weight	300 pounds
Price	$25.00
" with inside door	30.00

No. 3. DIMENSIONS

Outside measure	28 x 18¼ x 18 inches
Inside measure	15 x 10 x 9½ "
Approximate weight	500 pounds
Price	$35.00
" with inside door	40.00

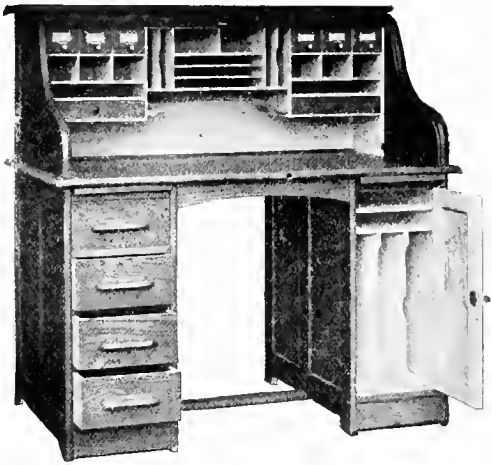
No. 4. DIMENSIONS

Outside measure	30¾ x 22¼ x 20½ inches
Inside measure	18 x 13¾ x 12 "
Approximate weight	700 pounds
Price	$45.00
" with inside door	50.00

No. 5. DIMENSIONS

Outside measure	35¾ x 24¼ x 23 inches
Inside measure	22½ x 16¾ x 13 "
Approximate weight	1000 pounds
Price	$65.00
" with inside door	70.00

OFFICE FIXTURES



DESKS

Made in solid oak, antique finish. Drawers on left hand side. Book closet on right. Can be furnished with drawers on both sides at same price. Former style sent unless otherwise ordered.

Low Top, Roll Curtain

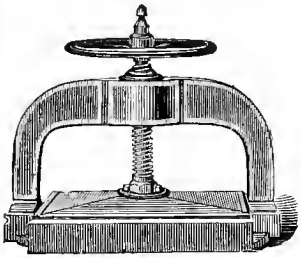
STYLES AND PRICES

FLAT TOP

No. 198, 4 ft. 2 in. x 2 ft. 6 in., each.....$18 00

ROLL TOP

No. 504, 4 ft. x 2 ft. 6 in., high top with book closet..... 45 00
No. 505, 4 ft. 6 in. x 2 ft. 6 in., high top, with drawers both sides..... 45 00
No. 537, 5 ft. x 2 ft. 10 in., with drawers both sides, raised panel drawer fronts, extra finish..... 70 00



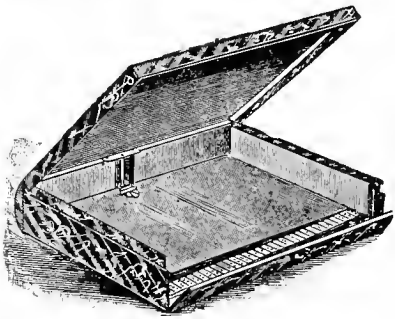
COPY PRESS

SIZES AND PRICES

No. 3 takes book	9x11,	black, $5 00;	ex. finish,	$6 00
No. 4 " "	10x12,	" 5 50;	" "	6 50
No. 5 " "	10x15,	" 6 50;	" "	7 50
No. 6 " "	11x16½	" 10 00;	" "	10 50

CHAIRS

Extra strong, with arms.....each, $2 00



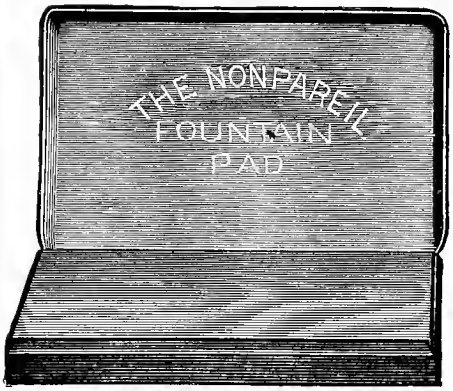
"B & B" Transfer Case

BOX FILES

STYLES AND PRICES

"Chicago," size 10½x11½x3.....$0 40
"Handy," " 10½x12 x3..... 60
"Convenient," " 10 x12 x3..... 85
" " 10 x14 x3..... 1 25
"Model," " 10½x12 x3..... 60
"B & B" Transfer Case, 10½x12x3..... 40
"Gum Stub" Files, 10x12x3.....each, 1 00

OFFICE SUPPLIES



SELF-INKING PADS

No. 0,	2¼ x 3½	inch,	each.....	$0 30
" 1,	2¾ x 4¼	"	"	40
" 2,	3¼ x 6¼	"	"	60
" 3,	4½ x 7½	"	"	85
" 4,	4 x 9	"	"	1 00

COLORS

Red, blue, black, violet and green

CHECK PROTECTORS

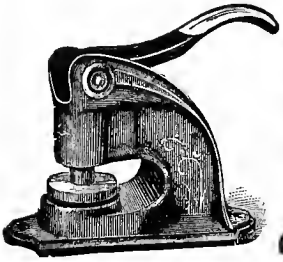
THE UPRIGHT

THE PEARL

Don't wait until you have to pay for a "raised check" before using ordinary common sense precaution; these prices leave you no excuse for being without a protector. These machines make a series of abrasions in the paper, after the amount has been written in, and effectually prevent the changing of the figures.

The Upright.....$1 25 The Pearl.....$1 50

STAMPS OR SEALS



No. 0, Weight 20 oz.
Size of die, 1½ in. diam.
Price, $1 75

No. 1. Weight, 2¼ lbs.
Size of die, 1⅝ in. diam.
Price, $2 00

The "Upright" Percussion Press.
Weight, 21bs. 1¼ die, $2 00

SOLID RUBBER TYPE.

In 1,900 Ways you will find a Font of our Type the Handiest Thing You Ever Possessed.

Often times you need a Rubber Stamp in a big hurry, for temporary use; it is at such times that our Superior Solid Rubber Type is positively invaluable, with it any matter can be set up the same as printers' type, and after using, it can be distributed, used again and so on, giving continuous service.

PRICES.

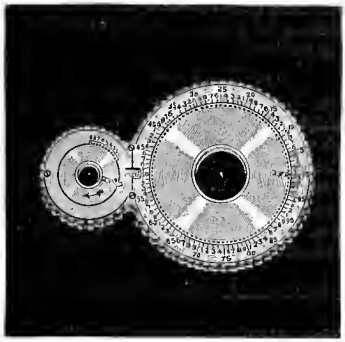
No. 12 rubber type, with necessary spaces and quads, tweezers and a 4-line holder, ... $2 50
Pica dates, with holder, per set 1 25

PRICES ON RUBBER HAND STAMPS.

Single line stamp, 3 inches long or less $0 30
More than one line on the same stamp:
For the first line, 3 inches or less 20
For each additional line, 3 inches or less 15

THE "ADDER."

Too simple to be called a "machine," but guaranteed to "add" with mechanical accuracy and rapidity any number of columns of figures, one, two or three at a time.



Price, each.....$3 00
Extras, points..... 20

The above cut represents "The Adder." The method of use will be understood at a glance. Starting with "The Adder" at zero, as it now stands, one has but to put the operating point, which is attached to the end of a pencil, successively in the disc pocket standing by each number to be added, turn as the arrow indicates until arrested by the stop on the right, and the sum is seen in the slot on the left where ciphers now show. Thus, 48, 25, 99, 65, turning the larger disc for each of these numbers, and 237 shows as the sum—*the hundreds carrying themselves automatically.* If there be three columns only, the third may be added in a similar manner, either separately or simultaneously, on the smaller disc; but if there be four or more columns, the double column process is, of course, speedier. In this way ledger accounts may be added two columns at once without confusion, weariness or mental strain, and iustantaneous results had in tallying. There are no mysteries to be solved, no hours to be lost in learning to operate. All this is we guarantee.

"PERFECTION" CHEMICAL FIRE EXTINGUISHER.

A handsome, highly polished, solid copper machine, affording perfect protection from fire. A gold mine to those living any distance from protection. Indorsed by all the leading insurance companies. They should be in every Creamery, Cheese Factory, Dairy and Milk Depot.

The "Perfection" Chemical Fire Extinguishers are made from heavy solid copper throughout, and tested to 200 lbs, pressure per square inch. Highly polished, they are handsome in appearance, and being the result of many years practical experience, embody the best features of all known methods for extinguishing fire. They have no equal for simplicity, effectiveness, durability, economy and safety. They afford the cheapest method of protection from fire yet devised and as there are no cocks, gauges, couplings or valves about them it is absolutely impossible for the machine to get out of order.

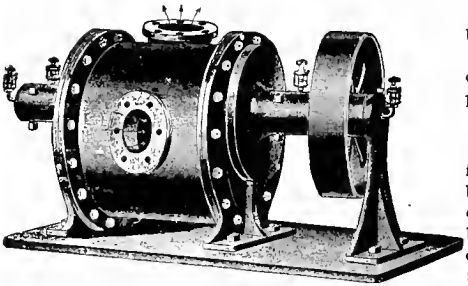
They can be operated instantly by any person, although they never saw the machine before, as all you have to do is simply turn it bottom end up when you will immediately get a 50-foot stream of fire-destroying chemical fluid, the last drop going as far as the first and as destructive to flames in oil, tar, spirits, kerosene or gasoline as in burning wood and equal to over 100 times the same amount of water in quenching fire.

Ex-Chief of Chicago Fire Department, D. J. Swenie, is authority for the statement that 76 per cent. of the fires in Chicago are extinguished by chemical fire extinguishers.

Price, each.....$6 00

BLOWERS

POWER STYLE



We illustrate what we consider to be the best **positive blower** on the market.

It is noiseless, powerful and free from all complications of gears and intermeshing pistons or revolvers

OPERATION

The operation of this blower is not on the fan principle, in which pressure is obtained by a high velocity of speed; but when the air enters the case at the inlet and is closed in by the vanes of the blower, it is absolutely confined and must be forced forward until finally released at the outlet, where it must have escape or the blower stop if outlet is closed. There is positively no chance for loss by backward escapement of air, after it once enters the inlet.

In many respects this blower has points of superiority over any Positive Blower made, and we call your attention to the following points:

1st. It has no gears whatever. No internal parts that require attention, adjustment or lubrication.

2d. It has only two journal bearings that are external to the blower casing. They are self-oiling. Easy of adjustment.

3d. Has no irregular internal surfaces that require contact to produce pressure, and add friction.

4th. Operating parts are always in perfect balance; thus blower may be safely run at a higher speed than any Positive Blower made, giving a proportionate increase in efficiency and a smaller blower may be used.

5th. A higher pressure can be obtained than is possible with any other.

6th. The blower is practically **noiseless** as compared with all other makes.

7th. It has greater capacity for its size and make than any other blower.

SPECIFICATIONS AND PRICES

Size. No.	Price.	Diam. Inlet and outlet, inches.	Diameter and width of blower inside, ins.	Discharge per rev.	Speed.	Cubic ft. per minute.	H. P. at 3 lbs.	H. P. at 5 lbs.	H. P. at 10 lbs.	Size of driving pulley, inches.	Weight of Blowers, pounds.	No. of brazing Fires.	Size of Cupola.	Floor space, extreme inches.
00	$30.00	1	7x 3	70 cub. in.	400	16	½	¾	1½	8x3	45	2	.....	14x 8
0	35.00	1½	9x 4	170 " "	350	35	¾	1	2	10x3	115	4	.....	18x10
x	55.00	2	10x 6	¼ " ft.	300	75	1	2	4	12x3	170	6	.....	20x12
⅛	70.00	2½	10x 9	⅜ " "	300	112	1½	3	6	12x4	225	8	.....	29x12
¼	100.00	3	12x10	¾ " "	250	188	3	4½	9	14x4	350	12	.....	26x14
½	150.00	5	18x12	1¾ " "	200	350	4½	7½	15	20x5	650	20	.....	36x18
1	200.00	8	24x15	4½ " "	175	787	10	15	30	24x6	1200	..	18-24 ins.	40x24
2	300.00	10	24x24	7 " "	175	1225	15	25	50	26x6	1700	..	24-30 "	50x24
3	375.00	12	36x24	10 " "	150	1500	20	32	65	44x6	4250	..	30-36 "	72x36
4	490.00	14	36x36	16 " "	150	2400	30	50	100	44x8	5486	..	36-42 "	96x36

HAND STYLE

For parties who do not have power we can most highly recommend the **No. 3 HAND BLOWER**. This is also a positive blower of considerable power.

PRICE

No. 3..... ....Each, $25 00

PASTEURIZED MILK, CREAM AND BUTTER

The Advantages it has Over the Ordinary Cream and Butter

Pasteurized products of the dairy are more than ever in favor with the public. The increased demand for the pure, healthy article is not confined alone to individuals and city milk dealers, but **creameries** are pasteurizing the entire product as it comes from the hand of the farmer and thereby producing an article of **butter with better keeping qualities** and a **continuous higher flavor.**

FIRST: What effect have bacteria on this substance? If we set a sample of milk aside it is only a matter of a few score of hours before this food product is rendered unfit for human use.

Milk as secreted in the healthy cow is known as sterile, and if it should be drawn in such condition without coming in contact with the air, and into receptacles that have been previously sterilized, it would keep sweet indefinitely; but the air teems with bacteria, therefore this is impossible. They drop into the milk from the dust in the air. They fall from the cow, and filth that may be upon her, during the process of milking. They inhabit seams and points in pails and cans and other dairy utensils, so that under all ordinary circumstances, milk contains organisms that work toward its destruction, and in many cases, toward the destruction of human life. It is a recognized fact that consumption in its many phases is a common disease of dairy cattle, and that the possibility of infection exists through the use of milk from animals affected with tuberculosis. Typhoid and scarlet fevers, as well as diphtheria, have been traced directly to an infected milk supply.

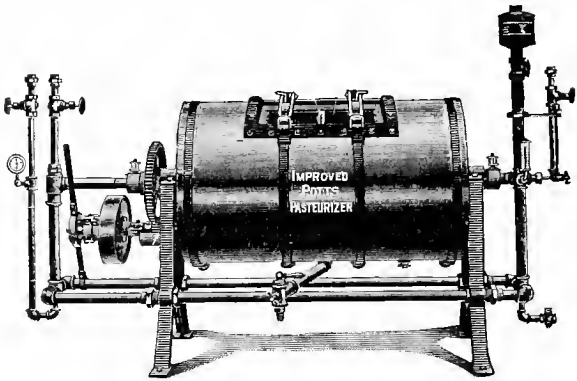
Bacteriology teaches us the same lesson, and tells us **why** dirt and carelessness increase the rapidity with which the milk is changed by these fermentations.

It shows us the relations between dirty conditions and bacterial life, how one presupposes in a certain sense the other. It is not dirt that causes the rapid change, but what the dirt contains.

If we exclude the dirt, as is done where scrupulous cleanliness is inaugurated, then we will also exclude the bacteria, and with them this multitude of fermentations that always accompanies them.

This can also be accomplished by the use of heat. If the milk is heated to a temperature of about 155 degrees Fahrenheit, and held at this temperature for twenty or thirty minutes, and then cooled as low as possible, it will keep from three to six days longer than it would otherwise.

THE POTTS PASTEURIZER



The majority of pasteurizers now on the market, or which have been devised from time to time, fail to fulfil the conditions required from either an economical or sanitary standpoint. They are, therefore, not ideal. In one or two cases pasteurizing machines have been devised that gave satisfactory results so far as destruction of germ life was concerned, but some defect in operation was so patent that they were soon discarded. Recognizing the absolute necessity of approaching this problem from both points of view if success was to attend our efforts, we have spent a great deal of money, time and labor on the elaboration of a machine that is pre-eminently satisfactory from the health point of view. Again, its practical character is such as will commend it to every person who becomes familiar with its workings.

We believe that the Potts pasteurizer is the machine that is going to mark an era in the matter of milk preservation. From all reports that reach us, where the machine has been given the most crucial trials under unfavorable as well as favorable conditions, we have yet to hear of a place where it has been found wanting.

It has a small water jacket and a relatively large heating surface, so that it heats up quickly.

The milk is thoroughly agitated, thus facilitating the heating process and keeping the contents of the pasteurizer well mixed.

The cooling of the milk can be accomplished with great rapidity. For this cold well water can first be used, to be followed with ice or ice water.

This rapid alternation in temperature exerts a more marked effect on the germ life in the milk than where the changes are more gradual.

The whole process of heating, holding and chilling is under the complete control of the operator as to time of exposure and temperature.

The temperature of the milk is taken directly without opening the vat, thus excluding all danger of reinfection.

While the vat is tightly closed from the air, an automatic vent permits the expulsion of animal odors and foul taints that may be in the milk.

The milk can be bottled directly from the vat without any extra handling.

The compact form of the machine will readily appeal to any operator. It combines the whole process in one machine, or can be easily arranged to serve as either heater or cooler.

It requires less power to heat and less ice to cool than any other machine on the market.

It is easy to clean; has no complicated devices to break or get out of order.

It is, in short, a machine that fulfills the most stringent hygienic requirements; and, moreover, it is at the same time by far the most practical machine from the standpoint of economical operation that has yet been devised. We know that we can recommend it with perfect confidence. A trial will convince the most skeptical of its merits.

Not only has it given thorough satisfaction under practical conditions, but the leading dairy schools of the country where scientific points of machinery are more carefully observed, are rapidly adopting it. The University of Wisconsin dairy school has had one in daily use for a long time, and the faculty of this school pronounce it the best machine that has yet been devised for the treatment of milk for direct consumption.

Prof. Russell, of that institution, has made a number of bacteriological tests as to its germ-destroying capacity, with the following results:

Where milk is received under factory conditions, as it is at the Wisconsin school, it contains a much larger amount of germ life to begin with than that received under conditions where it is possible to more thoroughly control the handling of the milk. He found that the milk selected from a creamery supply contained about 550,000 bacteria per cc., while the same milk after pasteurization had its germ content reduced nearly 99 per cent, or to 5 to 6,000 bacteria per cc. Where milk was selected under excellent conditions as from a single dairy, it normally contained about 67,000 bacteria per cc., and about 2,000 after pasteurizing. The number of bacteria left in the milk after treatment will depend very largely upon the way the milk has been handled previous to pasteurizing. The Potts machine destroys all of the bacteria that are in the vegetating stage, and this is all that can be asked of any machine.

Prof. Russell has tested this machine where tubercle bacilli were actually added to the milk, and finds that the infectiousness of such milk is actually destroyed in the Pott's pasteurizer.

SIZES AND PRICES

50 gal.	complete,	with	iron	stands,	thermometer,	etc.	.....	$125 00
75 "	"	"	"	"	"	"	.....	135 00
100 "	"	"	"	"	"	"	.....	150 00
150 "	"	"	"	"	"	"	.....	175 00
200 "	"	"	"	"	"	"	.....	200 00

These prices are F. O. B. factory.

ARTICLES OF INCORPORATION AND BY-LAWS

For Cheese Factory and Creamery Associations,

ARTICLES OF INCORPORATION OF.....ASSOCIATION.

We Whose names are hereto subscribed, and whose residences are within the county of.....in the state of..... do hereby associate ourselves together as a co-operative association under the laws of the state of.....to which we have adopted the following constitution, viz:

ARTICLE I.

The name of the Association will be the..... .....Association, and its place of business shall be at or near Section.....in the Town of.....in said.....county.

ARTICLE II.

The object of this association shall be the manufacture of butter and cheese or both from whole milk at actual cost.

ARTICLE III.

The officers of this association shall be a President, Vice-President, Secretary, Treasurer and three trustees, who shall be elected annually at the regular annual meeting of the Association, to be held on the first Monday of January of each year and their term of office shall be one year and until their successors shall have been duly elected and qualified.

ARTICLE IV.

The duties of the respective officers shall be as follows: The President shall preside at all meetings of the association. He shall have power to call special meetings of the association whenever in his judgment required by the business of the association or upon the written request of five or more members.

The Vice-President shall perform the duties of the President when he is absent or otherwise unable to attend to them.

The Secretary shall keep a record of all the meetings of the association, and make and sign all orders upon the Treasurer and pay over to the Treasurer all money which comes into his possession, taking the Treasurer's receipt therefor.

The Treasurer shall receive and receipt for all moneys belonging to the association and pay out the same only upon orders which shall be signed by the Secretary. The Secretary and Treasurer shall give bonds in such amount as the association shall provide.

The President, Vice-President, Secretary and Treasurer and three trustees shall constitute the Board of Directors, whose duties shall be to audit and allow all just claims against the association. They shall compute the amount of milk receipts, the amount of product sold, and the moneys received therefor, and, after deducting from the total receipts, the percentage herein provided for as a sinking fund and also the running expenses, on the 15th day of each month, divide the remaining receipts of the preceding month among the members and patrons of the association proportionately to the amount of whole milk or fat furnished by each. Provided, however, that in case of withdrawal of any member from this association before the moneys herein provided to be borrowed shall have been paid in full, principal and interest, all product from milk furnished by such withdrawing members then on hand, and any moneys received from such product then in the possession of the association shall be retained until all said moneys so borrowed shall have been fully repaid, and thereafter said moneys, or any remainder thereof after applying the just share such withdrawing members therefrom to the repayment of any balance of such indebtedness not paid from the sinking fund, shall be paid over to him or his assigns.

The Board of Directors shall cause the Secretary to make, in writing, a report to the annual meeting of the association, setting forth in detail the gross amount of milk receipts, the net amount of receipts from products sold and all other receipts, the amount paid out for running expenses, the sums, if any, paid out for milk, and all other matters pertaining to the business of the association. A like statement, containing the gross amount of milk receipts, the net receipts from products sold and all running expenses of the creamery shall be made each month and posted conspicuously in the creamery building at the time of the division of the prior month's receipts as aforesaid.

The Board of Directors shall borrow a sum of money not exceeding.....Thousand dollars, to be used by them in the erection and completion and furnishing of the creamery building and for no other purpose. Said members of said board may borrow said money on their own responsibility, and in case they do so, then the sinking fund herein provided for shall by them be applied in payment of such borrowed moneys as the same falls due in the same manner as though said moneys had been borrowed by the association. Said members of the board in such case shall be held to be the creditors of the association to the amount of such moneys unpaid, and the several members of said association shall be personally responsible, jointly and severally, for the same. Provided, however, that prior to any legal assertion of such individual responsibility, the entire sinking fund then accrued and on hand shall be applied upon such indebtedness. And, provided further, that said members so borrowing said moneys may if they so elect, demand and receive any part or all of the moneys received from products sold then in the possession of the association, upon such indebtedness before enforcing such personal responsibility. In which case only that part of such indebtedness remaining after applying thereon all sums so received shall be recovered or demanded from the members of the association.

ARTICLE V.

The several members shall furnish all the milk from all the cows subscribed by each, all milk to be sound, fresh, unadulterated, pure and unskimmed, and patrons of the association, not members, may by agreement with the Board of Trustees furnish such amounts of milk as may be so agreed upon. The association shall receive all such milk so furnished, manufacture the same into butter, cheese or other products and sell and receive all moneys from the product; and from the moneys so received deduct such a percentage thereof or such a number of cents per one hundred pounds of milk as shall have been agreed upon by the association in the by-laws or otherwise, and also deduct the running expenses of the creamery, the remainder thereof to be distributed as provided in Article IV hereof.

ARTICLE VI.

Each member shall be entitled to one vote only at any meeting of the association. New members may be admitted as provided in the By-Laws. Members shall be permitted to withdraw only as provided in the By-Laws.

ARTICLE VII.

The first officers and Board of Trustees shall be as follows: ....President; .... Vice-President; ..... Secretary; ....Treasurer; ....Trustees.

ARTICLE VIII.

The constitution may be amended at any annual meeting, or at any special meeting called for that purpose, provided that two-thirds of all members present vote in favor of such change; and provided further, that at least one month's notice of such proposed amendment shall have been given in such manner as may be provided in the By-Laws, or otherwise by the association.

NAMES.

BY-LAWS OF THE ..... ASSOCIATION.

I.

The Secretary and Treasurer shall give bonds in the sum of.....dollars, both the bonds to be approved by the Board of Directors.

II.

Five cents on each one hundred pounds of milk received at the creamery shall be reserved to form a sinking fund.

III.

No milk shall be received or business of any kind transacted at the creamery on Sundays.

IV.

During the interval between the 20th day of May and the 20th day of September of each season all milk shall be delivered at the creamery as early at least as nine o'clock a. m.; during the remaining portion of the season as early as ten o'clock a. m.

V.

All milk delivered shall be sweet and in good condition; and if any be found otherwise, the operator may condemn the same, and in such case he shall notify the president thereof. The operator shall preserve samples of every delivery of each patron's milk, testing same at proper intervals on the composite testing plan.

VI.

Any member or patron of the Association found skimming, watering, or in any manner adulterating his milk offered at the creamery shall forfeit to the association as follows: For the first offense, ten dollars; for the second offense, twenty-five dollars; for the third offense he or she shall forfeit all interest in the association and also all claims for milk theretofore delivered to the association. But no such forfeiture shall be adjudged without first affording to the member or patron charged with so having skimmed, watered or adulterated his milk, full opportunity to defend himself from such charge. Any member sending to the creamery any bloody or unhealthy milk, or any milk from any cow within four days after calving, shall, if convicted of having done so knowingly, forfeit as prescribed above in this section.

VII.

Members and patrons furnishing whole milk may take from the separator or tank at the creamery four-fifths of the quantity of milk (in pounds or quantity) delivered at the creamery by them on that day. Any member taking therefrom more than such amount shall forfeit to the association the sum of five dollars for each such taking.

VIII.

Withdrawals from the association shall be allowed only as follows: The member desiring to withdraw shall give at least one month's notice of his application therefor. Such application shall only be allowed on a vote of two-thirds of all members present and voting at any meeting for hearing at which such application shall have been noticed. Provided, however: That any member living more than three miles by the nearest road from the creamery building, may make application to the Board of Directors, who in their discretion may grant permission to such member to withdraw from the association.

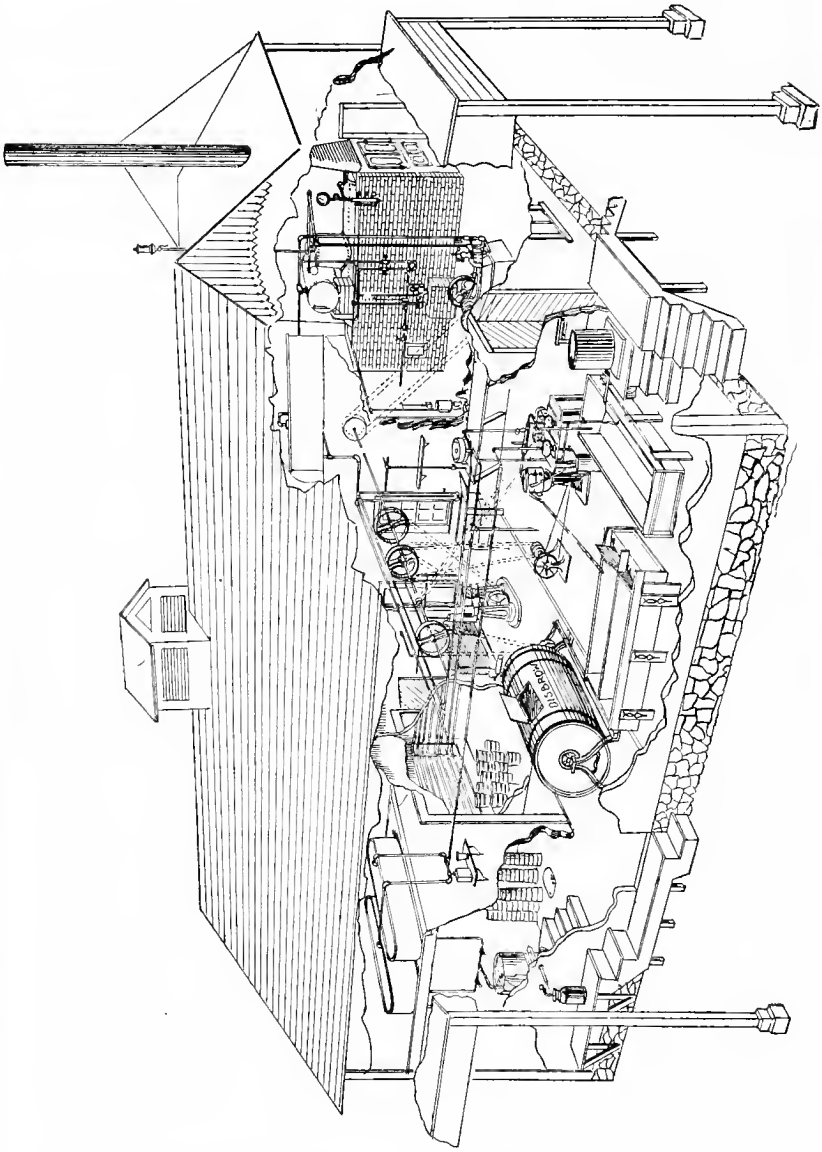
IX.

Any member refusing to deliver at the creamery, the amount agreed to be there delivered, shall without reasons satisfactory therefor to the association, forfeit all interest in the product on hand.

X.

Notice of any proposed amendment to the constitution shall be in writing or printing and shall be kept posted prominently in the creamery building and also on the walls of the delivery department for the reception of milk.

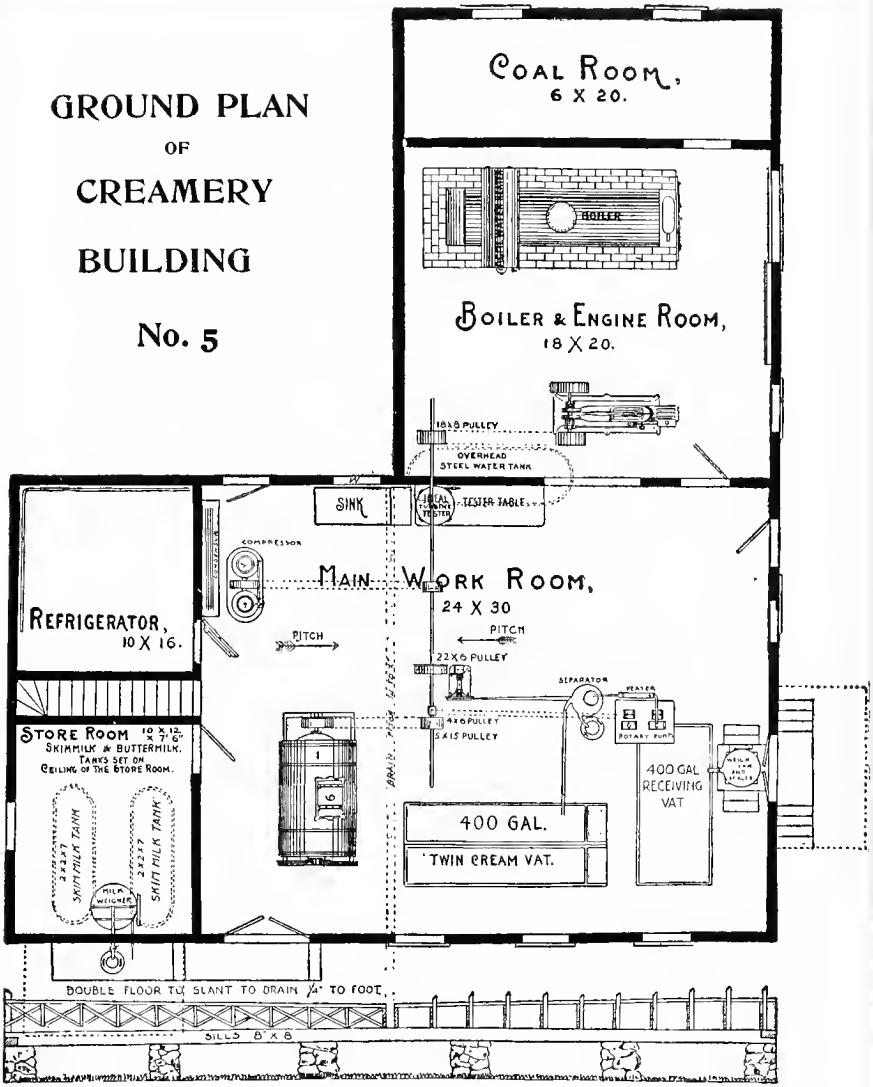
BUILDING AND INTERIOR VIEW OF OUR CREAMERY No. 5



The accompanying cut shows a creamery built on our plan No. 5, ground plan of which is shown on page 97.

We can recommend it for neatness, convenience and economy of space and cost.

The cost of a building built on this plan varies from $600 to $900, according to the kind of material in the locality in which it is erected.



The accompanying cut shows ground plan for a Creamery which we devised after careful study of the subject, and from long experience we feel warranted in the assertion that for convenience in working and economy of space and cost, it could not be materially improved upon, and it has been adopted by many of our customers.

The plan shows position of machinery for a one-Separator Creamery, while there is room for the addition of two more Separators should they ever be needed.

Of course the Engine Room can be placed on either side of the Creamery, as the situation would make most convenient. A cut of complete Creamery built on this plan is shown on page 96.

We have other plans of Creameries and Skimming Stations, and we furnish to our customers detail plans, specifications and blue prints for use in building their Creamery.

COST OF A CREAMERY

The question of the cost of a Creamery is asked us many times. It is as difficult to answer exactly as the question, "what will it cost to build a house?"

It depends upon the number of cows butter is to be made from and the style and capacity of machinery.

We can give approximate figures, however, which will serve every purpose in planning.

A first-class building (not a cheap affair such as creamery organizers build) can be built at from $800 to $1,100. We give a good plan on pages 290-291.

The machinery for making butter from 300 to 500 cows, including 15-Horse Steel Boiler, 12-Horse Frost Engine, Alpha Separator of 2,500 pounds capacity, Disbrow Combined Churn and Worker, "Ideal" Milk Weigher, "Climax" Milk Heater and all the other necessary machinery and apparatus will cost from $1,300 to $1,600.

If a United States, Springer, Russian or any other Hollow Bowl machine is used, the cost of the outfit would be from $100 to $300 less.

These figures will enable anyone to make their plans with safety.

We shall be pleased to furnish plans of buildings and complete lists of machinery to suit individual needs, on application.

CREAMERY MACHINERY

In buying machinery of any kind buy nothing but the *best*. It is economy in the long run. It is not always possible to sell the best goods at as low a price as those of inferior quality. As we are the largest manufacturers of creamery machinery in the country, however, our large production enables us to make close prices and frequently our goods will be found to cost no more, and in many cases less, than those of inferior make. Our prices are uniform and as for quality, every article is guaranteed.

We take especial pleasure in recommending the Alpha Separators, New Disbrow Combined Churns and Workers, "Ideal" Skimmed Milk Weighers, "Ideal" Testers, "Climax" Milk Heaters and our Steel Boilers and Victor Engines. We never offer useless or obsolete articles and every creamery we equip is done on honor.

We have furnished the equipment for hundreds of creameries throughout the country, and have scores of testimonial letters expressing the pleasure of the owners with the quality and price of our goods and reliability of our statements.

Should you desire to communicate with some one near you who has dealt with us, please write us; no doubt we can give you the address of some one whom you may know by reputation, if not personally.

We will be glad to have intending purchasers see or write to any creamery we have ever equipped to ascertain the satisfaction we have been able to give in both quality and price.

Please remember we court inquiry and at all times are pleased to furnish any information in our power to aid those building creameries.

SPECIMEN OUTFIT LIST

FOR 300 TO 500 COW CREAMERY

1 20-H. P. Half or Full Arch front tubular boiler, complete with stack.
1 Boiler Feed Pump and Heater or Injector as desired.
1 12 to 15-H. P. Horizontal Engine including Sight Feed Lubricator.
400 Fire Brick.
1 Bbl. Fire Clay.
2 No. 1 Rotary Whole and Skimmed Milk Pumps.
1 3000 lbs. capacity No. 1 Alpha Belt Separator.
1 Climax Milk Heater.
1 Bair or Star Cream Cooler.
1 60-gal. Weigh Can with 3 in. Perfection Gate.
1 400-gallon Milk Receiving Vat.
1 300-gal. Farrington Cream Ripener.
1 No. 4 Disbrow Combined Churn and Worker.
1 Portable Wash Sink, galvanized lined.
1 Vat Strainer.
1 Disbrow Churn Strainer.
1 24-Bottle (or larger if desired) Ideal Turbine Tester Complete.
1 Conductor Head.
6 Feet Conductor Pipe.
1 200-gal. Galvanized Steel Skimmed Milk Tank.
1 300-gal. Galvanized Steel Buttermilk Tank.
1 Ideal Skimmed Milk Weigher.
1 Noiseless or Penberthy Water Heater.
1 Buttermilk Strainer.
1 14-in. or 17-in. Iron Head Mop.
1 50 to 250-Patron Elgin Milk Ledger.
1 Eureka Check Register.
1 Dozen Weekly, Monthly or Semi-monthly Milk Sheets.
1 Newton Computator.
1 Ideal Test Measure (Composite).
1 Babcock Test Bottle Brush.
6 Composite Test Jar Brushes.
25 or more ½-pint or pint Composite Test Jars with Lightning tin top.
1 18-in. to 24-in. Butter Trier.
1 8-oz. Graduate (for Butter Color).
6 Common or Large Floating Thermometers.
1 Butter Packer.
1 Dairy or New York Style Ladle.
1 Factory Ladle.
1 Canvas Apron (light or heavy weight).
1 600-lb Double Beam Platform Scale.
1 Butter Salting Scale.
5 12x1 $\frac{11}{16}$-in. Adjustable Drop Hangers.
4 1 $\frac{11}{16}$ Shaft Collars.
20 ft. 1$\frac{11}{16}$ Main Shafting.
10 " " Counter "
20 " ¾-in. 4-ply Steam Hose.
30 " ¾-in. 3-ply Conducting Hose.
1 Belt Awl.
100 ft. Cut Rawhide Lacing.
5 lbs. Italian Hemp Packing.
1 lb. each Piston and Cylinder Packing.
1 Spiral Engineers' Favorite or Steam Flue Cleaner.
1 Coal Scoop.
1 Poker.
1 Enterprise or Malleable Pipe Vise.
1 Barnes, Stanwood or Saunders Pipe Cutter.
1 Pair Common or Adjustable Pipe Tongs.
1 Stilson, Trimo, or B. & C. Pipe Wrench.
1 Coe or Alligator Wrench.
1 Zinc, Steel or Brass Oiler.
1 Well Pump, pulley or steam style as desired, with necessary pipe rod and cylinder.
Necessary connection and exhaust pipe (black iron or galvanized) for boiler, engine, pumps, wash sink and buttermilk vats, etc.
Necessary Check, globe and angle valves for above connections.
Necessary Ells, Tees, Unions, Nipples, Reducers, Couplings, Plugs, etc. for above connections.
1 Main Drive Wood Split Pulley.
1 " Shaft " " "
1 Counter " " " "
2 Small Pumps " " "
1 Well Pump " " "
1 Churn & Worker " "
1 Separator " "

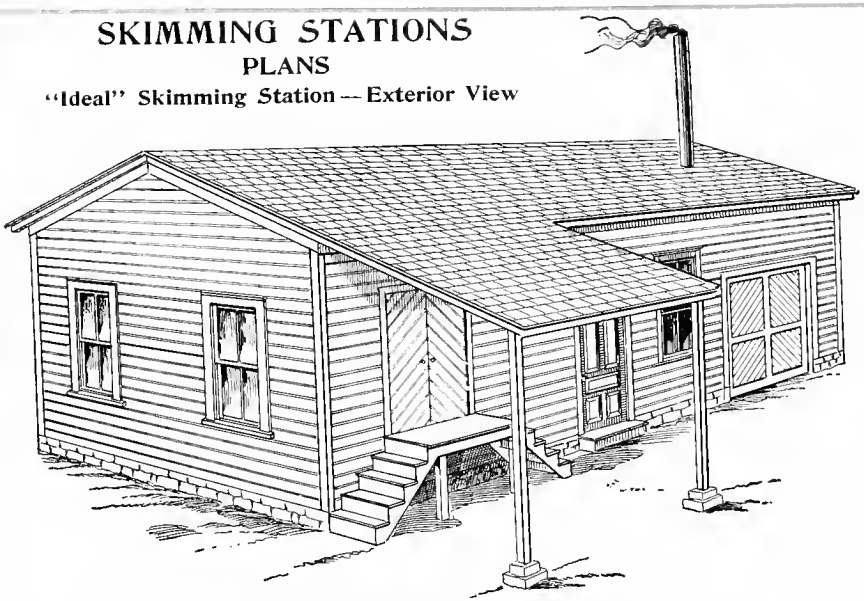
1 REFRIGERATING PLANT.

The above is a general list for creamery, and is altered to suit needs of purchaser and demands of location and building specifications. It is intended to give a general idea of apparatus necessary, and will be completed and thoroughly itemized on application. Complete outfit for above sized creamery can be furnished for from $1,200.00 to $2,000.00, exclusive of Refrigerating Plant. Write us for full particulars, plans, specifications and estimates.

SKIMMING STATIONS

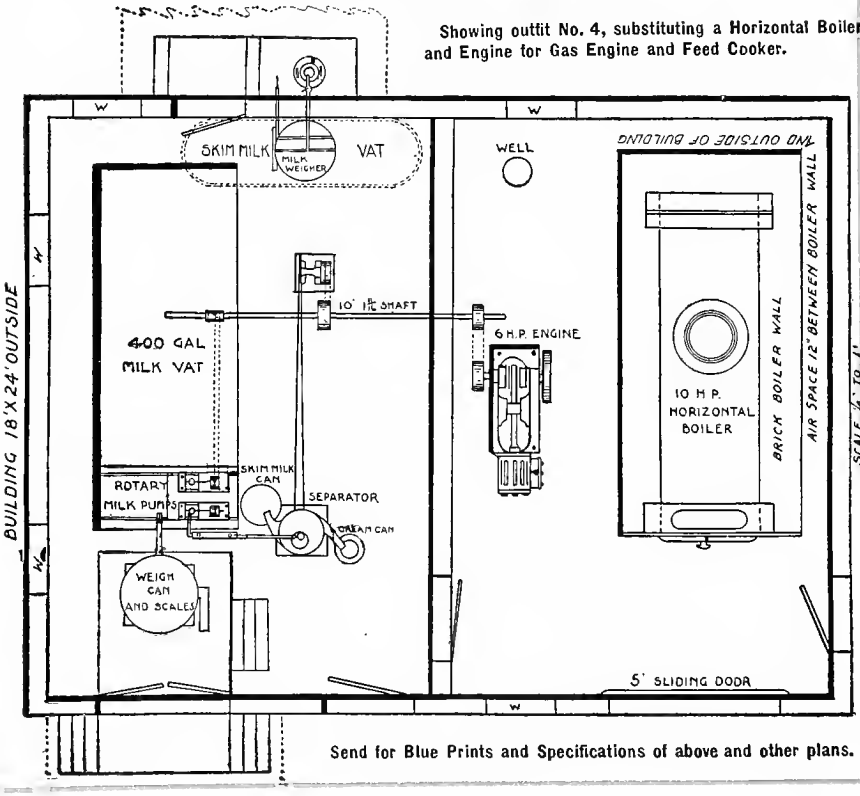
PLANS

"Ideal" Skimming Station — Exterior View



"Ideal" Skimming Station — Ground Plan

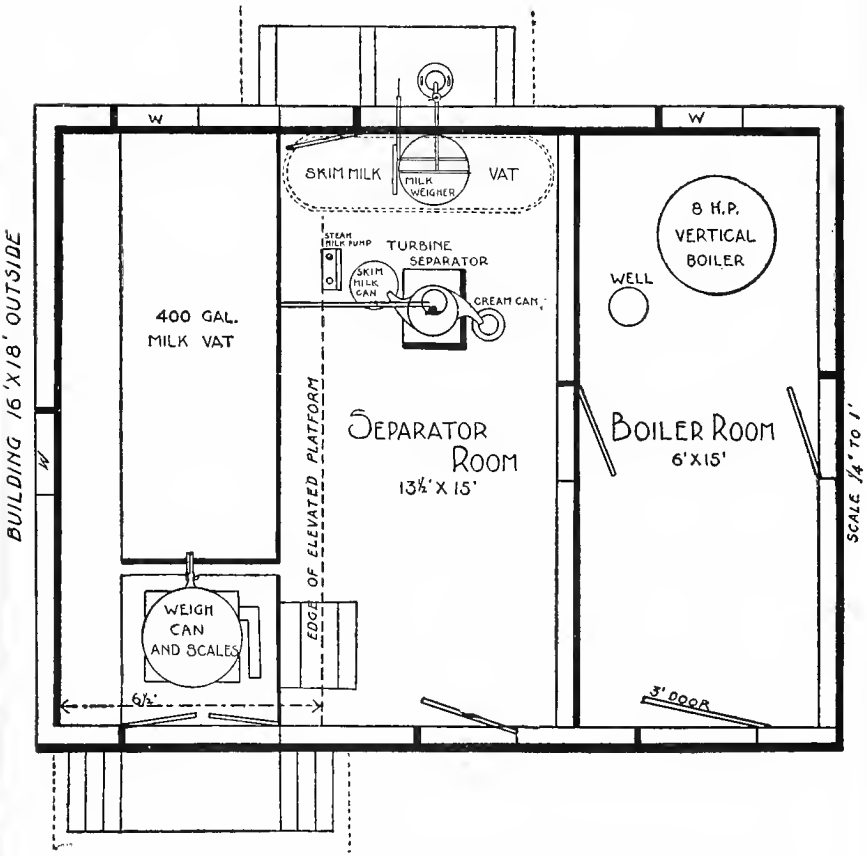
Showing outfit No. 4, substituting a Horizontal Boiler and Engine for Gas Engine and Feed Cooker.



Send for Blue Prints and Specifications of above and other plans.

SKIMMING STATIONS

"IDEAL" SKIMMING STATION. GROUND PLAN SHOWING OUTFIT No. 1



SKIMMING STATION OUTFITS

No. 1

1 No. 1 Alpha Turbine Separator, actual capacity 3,000 lbs. per hour.
1 10-H. P. Horizontal or Vertical Boiler with smoke stack, injector and fire brick.
1 400-Gal. Milk Receiving Vat.
1 60-Gal. Weigh Can with three Perfection Gates
1 5-Beam 600-lb. Scale, with or without wheels.
1 Light or Heavy Conductor with 6 ft of trough.
1 "Ideal" Skimmed Milk Weigher and galvanized steel tank with connections.
1 Portable Galvanized Iron Lined Wash Sink.
1 "Climax" Milk Heater.
1 10-Gal. Skimmed Milk Can.
12 20-Gal. Union Cream Carrying Cans.
1 10-foot Bair Cream Cooler.
1 "BB" 350-Gal. capacity Moore Deep Well Pump with Cylinder.
½ barrel Fire Clay.
1 ¾-inch XL Ejector.
4 dozen 1-pint Composite Test Jars.
1 "Ideal" Test Measure,
1 Marsh Steam Creamery Milk Pump.
1 24-bottle "Ideal" Turbine Tester, complete.

All necessary pipe, fittiugs and valves.

OUTFIT No. 2

1 No. 1 Alpha Turbine Separator, actual capacity, 3,000 lbs. per hour.
1 8-H. P. Economizer Boiler, complete with smoke stack and injector.
1 400-gal. Milk Receiving Vat.
1 60-gal. Weigh Can, with 3-in. Perfection Gate.
1 Light or Heavy Conductor Head with 6 feet of trough.
1 Double Beam Scale, 600 lbs. capacity, with or without wheels.
1 Ideal Skimmed Milk Weigher and Galvanized Steel Tank with connections.
1 Climax Milk Heater.
1 "BB" 350-gal. capacity Moore Deep Well Pump with cylinder.
12 20-gal. Union Carrying Cans.
1 Portable Galvanized Iron Lined Wash Sink.
1 10-gal. Skimmed Milk Can.
1 ¾-in. XL Ejector.
1 10-ft. Bair Cream Cooler.
4 Doz. 1-pt. Composite Test Jars.
1 Ideal Test Measure.
1 Marsh Steam Creamery Milk Pump, single cylinder.
1 24-bottle Ideal Turbine Tester, complete.

All necessary pipe, fittings and valves.

OUTFIT No. 3

1 10-H. P. Submerged Flue Upright Boiler complete with smoke stack, inspirator and fittings.
1 No. 1 Alpha Turbine Separator, actual capacity, 3,000 lbs. per hour.
1 400-gal. Milk Receiving Vat.
1 60-gal. Weigh Can with 3-in. Perfection Gate.
1 Light or Heavy Conductor Head with 5 feet of trough.
1 Double Beam Scale, 600 lbs. capacity, with or without wheels.
1 Ideal Skimmed Milk Weigher, with Galvanized tank and connections.
1 10-gal. Skimmed Milk Can.
1 Climax Milk Heater.
1 "BB" 350-gal. capacity Moore Deep Well Pump with cylinder.
12 20-gal. Hodo Cream Carrying Cans.
1 Portable Galvanized Iron Lined Wash Sink.
1 ¾-in. XL Ejector.
1 10-ft. Bair Cream Cooler.
1 24-bottle Ideal Turbine Tester, complete.
4 Doz. 1-pt. Composite Test Jars.
1 Ideal Test Measure.
1 Marsh Steam Creamery Pump, single cylinder.

All necessary pipes, fittings and valves.

OUTFIT No. 4

1 4-H. P. White Improved Gas or Gasoline Engine.
1 No. 2 Ideal Feed Cooker and Boiler, complete.
1 No. 1 Alpha Belt Separator, actual capacity, 3,000 lbs. per hour.
1 300-gal. Milk Receiving Vat.
1 60-gal. Weigh Can with 3-in. Perfection Gate.
1 Light or Heavy Conductor Head and 5 ft. of trough.
1 Double Beam Scale, 600 lbs. capacity, with or without wheels.
1 Ideal Skimmed Milk Weigher, Galvanized steel tank and connections.
1 Covered Crank Force and Suction Pump.
1 Climax Milk Heater.
12 20-gal. Hodo Cream Carrying Cans.
1 Portable Galvanized Iron Lined Wash Sink.
1 10-gal. Skimmed Milk Can.
1 ¾-in. XL Ejector.
1 10-ft. Bair Cream Cooler.
4 Doz. 1-pt. Composite Test Jars.
1 Ideal Test Measure.
1 No. 1 Sanitary Force Pump.
4 Wood Split Pulleys.
12 ft. 1 $\frac{11}{16}$-in. Shafting.
2 1 $\frac{11}{16}$-in. Shaft Collars.
3 12 x 1 $\frac{11}{16}$-in. Adjustable Drop Hangers.

All necessary pipe, fittings and valves.

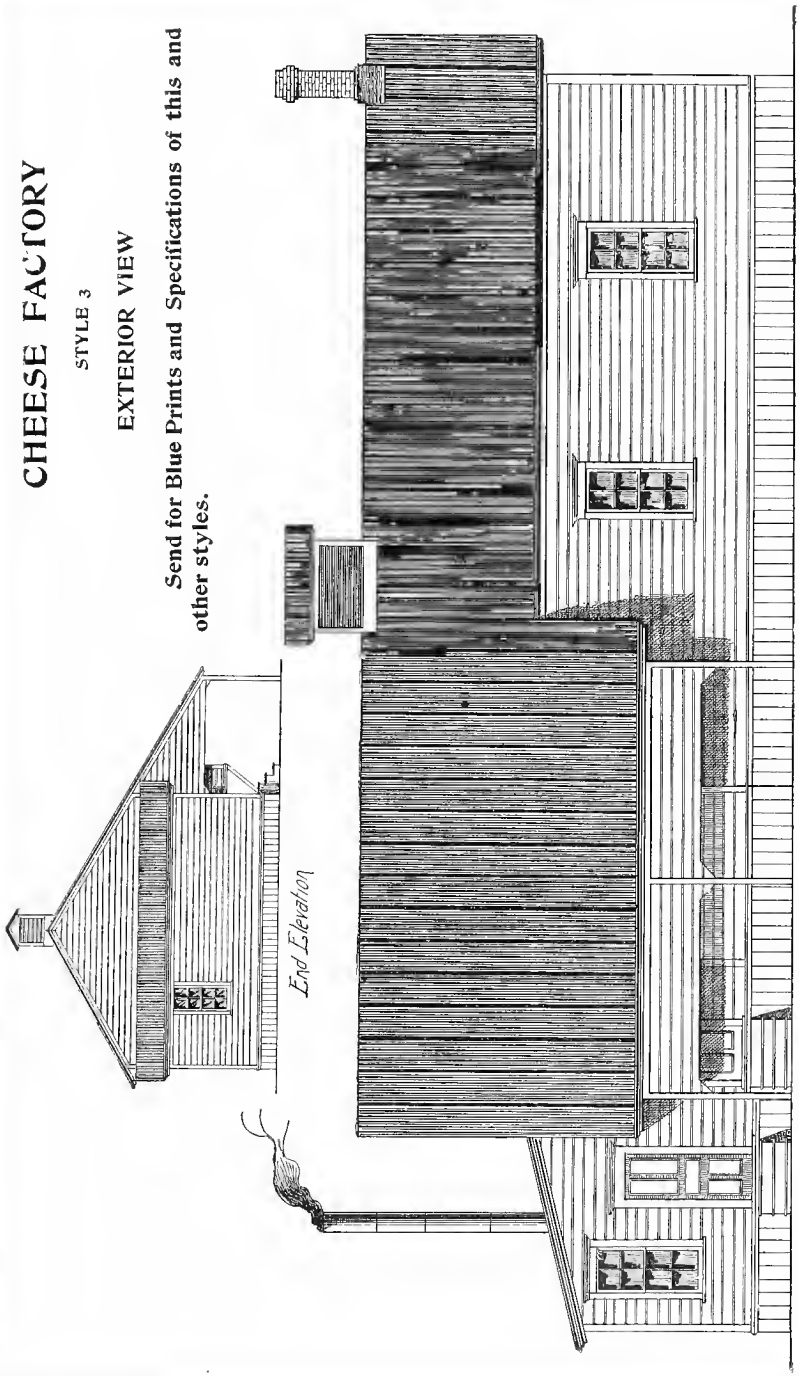
WRITE FOR PRICES

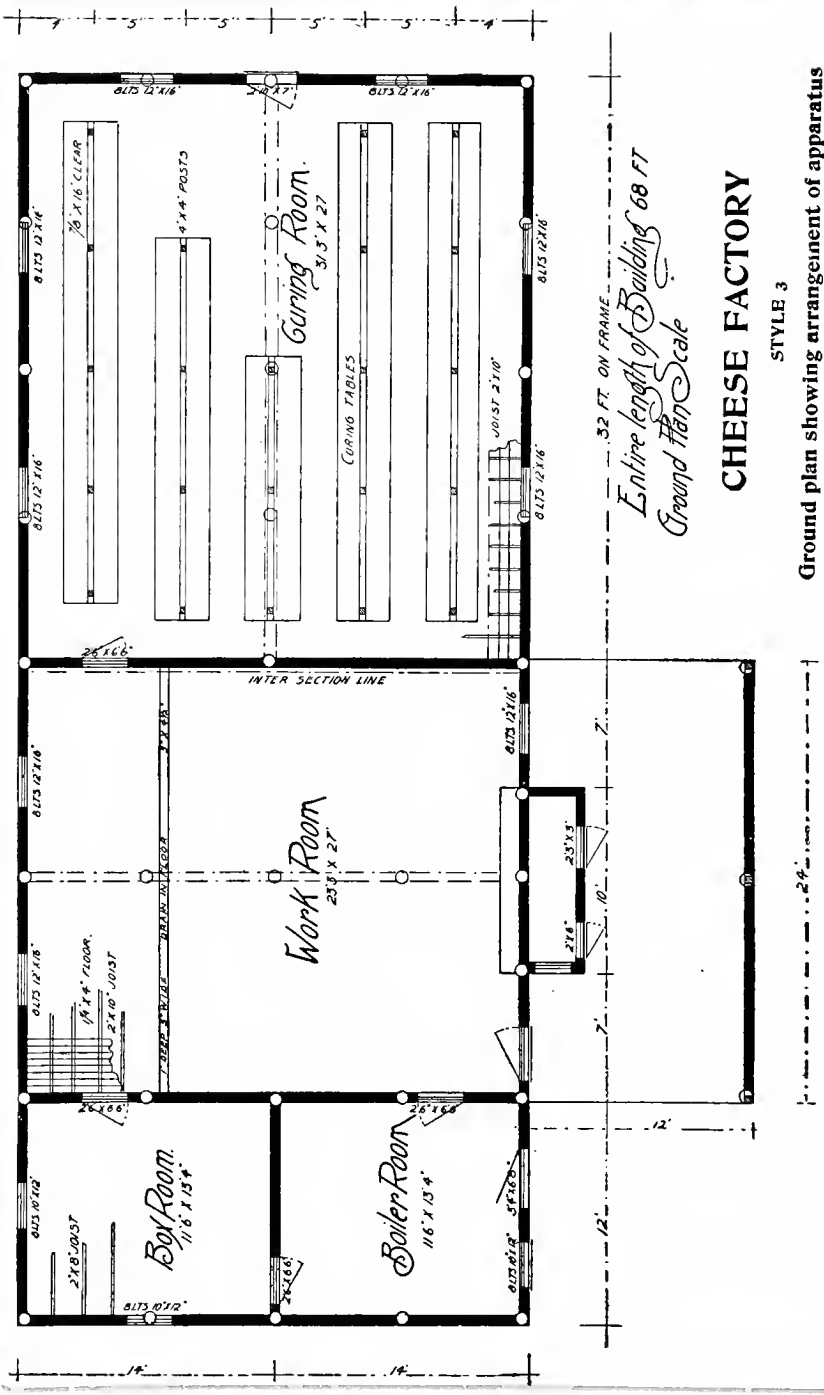
CHEESE FACTORY

STYLE 3

EXTERIOR VIEW

Send for Blue Prints and Specifications of this and other styles.





CHEESE FACTORY

STYLE 3

Ground plan showing arrangement of apparatus

LIST OF APPARATUS AND SUPPLIES FOR CHEESE FACTORY No. 3

To make Full Cream Cheese from the Milk of 500 to 800 cows.

MACHINERY

1 8 H. P. Economizer Boiler, complete with all fittings as per page 11 of our large catalogue.
1 5-Beam 600-lb. Scale (Ideal or Fairbanks), with or without wheels.
1 ½-oz. x 240-lb. S. B. Tin Scoop Common Union Scale.
1 Square Pan Spring Balance Salting Scale (20 lbs. x 2 oz.).
1 80-gal. Weigh Can.
1 Light or Heavy Conductor Head and 10 feet of trough.
2 600-gal. Up-to-date Channel Bottom Cheese Vats.
1 10-ft. Curd Sink, copper-lined.

1 New Style Pohl Curd Mill and Salter.
1 Steel Frame Gang Cheese Press. eel

15 15-in. x 7-in. Tinned Gang Press Hoops.
1 8-in. x 20-in. Horizontal Curd Knife.
1 14-in. blade x 20-in. Perpendicular Curd Knife.
1 Long-handled Gallon Dipper.
1 Short-handled Gallon Dipper.
1 Strainer Dipper.
1 Plain Siphon.
1 Half-round Channel Bottom Whey Strainer, with spout.
2 Tin Curd Scoops.
2 8-oz. Glass Graduates.
1 6-in. x ⅝-in. Cheese Trier, flat handle.
1 Tinned Cheese Knife.
1 Set Months and Dates.
2 14-in. Wood-head Mops.
1 Combined Floor Brush and Mop.
1 Set Test Instruments with Quevennes Lactometer.

6 10-in. Flange Thermometers.
1 No. 5 "Sure Grip" Tackle Block.
1 Set Milk Can Hooks, cross bar, and 25 ft. ¾-in. rope.
1 Speed Knife.
1 New Style, 12-bottle Roe Pattern Hand Tester.
1 Double Milk Slate.
1 Roe Pattern Cheese Box Machine 15-in. drum and table.
1 Hygrometer.
1 No, 3 Chief Injector.
1 Little Detective.
1 Marschall Rennet Test.
2 Flat-sided Curd Pails.
1 Spence Milk Scope.
25 lbs. Phospho.
1 Curd Rake.
1 Cheese Box and Shelf Scraper with 2½-in. cutter.
Steam heating coils for curing room, with all necessary connecting pipes, valves and fittings.
90 ft. ¾-in. Steam Pipe.
10 ¾-in. Elbows.
6 ¾-in. Couplings.
5 ¾-in. J. D. Globe Valves.
1 ¾-in. J. D. Check Valve.
1 Coal Scoop.
1 Poker.
3 ABC Brushes.
2 2½-ft. x 2½-ft. x 8-ft. Galvanized Steel Whey Tanks.
1 Yates Whey Measurer.
1 1½-in. Blakesley Steam Jet Pump with pipe and connections for same.
1 Office Desk.
1 Office Chair.
1 "Webb" Adding Machine.

SUPPLIES

5½ yds. 76-in. Strainer Cloth.
1,000 14½-in. x 10-in. Taper Excelsior Bandages.
1,000 14-in. Cloth Circles.
8 Gallons Hansen's Rennet Extract in bottles.

2 Gallons Hansen's Cheese Color.
1 60-patron Roe Cheese Factory Book.
1 Bundle Scale Boards (whitewood).
100 Sets 15-in. x 8-in. Cheese Box stock.
50 15-in. Press Cloth Circles.
5 lbs. BB Preservaline.

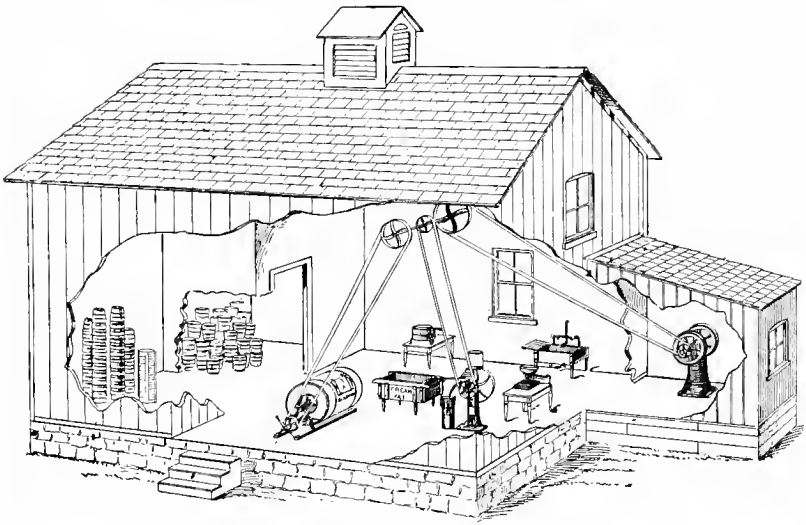
CANS

15 20-gallon Hodo Cans.
25 30 " " "

15 20-gallon Union Cans.
25 30 " " "

FARM DAIRY BUILDING

For a Dairy of 20 to 30 Cows, 14 x 22



DAIRY OUTFITS

NO. 1

For 8 to 20 Cows

Hand Separator, capacity, 200 pounds per hour.
40-Gallon Churn.
Butter Worker.
4-Bottle Babcock Tester

Complete.....$.....

NO. 2

For 20 to 75 Cows. 1-H. Tread Power

400 pounds per hour Separator.
60-Gallon Churn.
Power Butter Worker.
8-Bottle Tester.
50-Gallon Cream Vat.
Shafting, Pulleys and Belting.

Complete.....$.....

NO. 3

For 75 to 100 Cows. Steam Boiler and Engine. 2-H. Power

600 pounds per hour Separator.
Combined Churn and Butter Worker.
12-Bottle Babcock Tester.
100-Gallon Vat.
Shafting, Pulleys and Belting,

Complete.....$.....

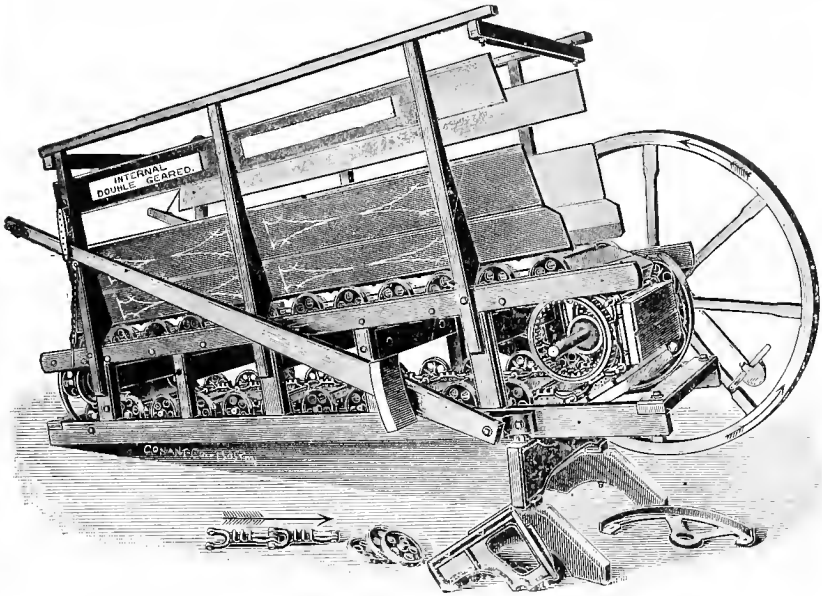
We make a specialty of fitting out private dairies. We handle and manufacture nothing but first-class goods, and guarantee satisfaction.

Write for Net Prices before Buying.

TREAD POWERS

THE NEW INTERNAL-DOUBLE-GEARED RAILWAY HORSE POWER

(PATENT APPLIED FOR)



Interior view showing gearing.

A radically new departure in horse-tread power construction, combining all the advantages of double and triple gear with single shaft, thereby effecting a marked diminution of friction. Further material saving of friction and consequent gain in power can be made by the use of center draft lag-irons. These are of malleable iron and practically unbreakable, thus almost entirely eliminating an item of repairs, which in other makes of power, is a never-ending source of expense and vexation.

SIZES AND PRICES

	LIGHT	HEAVY
1-horse power, with automatic speed regulator	$ 80 00	$100 00
2 " " " " "	125 00	140 00
3 " " " " "	160 00	200 00
4 " " " " "	.....	225 00

Mounting on wheels extra.

"BABY" JUNIOR

This machine is an exact fac simile of the "Baby" only smaller and lighter, and is designed to be run by small pony, donkey, calf, sheep or large dog.

PRICE

Including speed regulator and pulley $50.00

For Specifications see page 310

SPECIFICATIONS OF ST. ALBANS TREAD POWERS.

STYLE.	Weight.	Revolutions per minute. Horses walking 2 miles per hour.	† Size of Band Wheel.		Length of Shaft.	DIMENSIONS.				
			Diameter.	Width of Face.		Length of Frame.	Width of Frame.	Width between top of side boards.	Length of Tread.	Width of Tread.
Baby Jr. Power.....	500	*103	30 in.	3½ in.	2 ft., 6½ in.	7 ft.	1 ft., 7 in.	2 ft., 2 in.	5 ft., 4 in.	1 ft.
Light 1-Horse Power.....	900	103	48 in.	4½ in.	3 ft.	8 ft., 8 in.	2 ft., 1 in.	2 ft., 7½ in.	7 ft., 8 in.	1 ft., 5 in.
Heavy 1 " "	1,150	*103	48 in.	4½ in.	3 ft., 6 in.	9 ft., 9 in.	2 ft., 5 in.	2 ft., 9 in.	8 ft.	1 ft., 9 in.
" 2 " "	1,750	103	48 in.	4½ in.	5 ft., 7¼ in.	9 ft., 9 in.	4 ft., 8 in.	5 ft.	8 ft.	3 ft., 11 in.
" ‡2 " "	2,100	103	48 in.	4½ in.	6 ft., 1¼ in.	10 ft., 6 in.	5 ft., 2 in.	5 ft., 6 in.	8 ft., 8 in.	4 ft., 5 in.
" ‡3 " "	2,800	103	60 in.	5 in.	7 ft., 9 in.	10 ft.	6 ft., 9 in.	7 ft., 2 in.	8 ft.	6 ft., in.
" 3 " "	3,150	103	60 in.	5 in.	10 ft., 3 in.	10 ft.	7 ft., 3 in.	7 ft., 8 in.	8 ft.	6 ft., 6 in.
" 4 " "	3,900	103	60 in.	5½ in.	10 ft., 6½ in.	10 ft.	9 ft., 6 in.	9 ft., 10 in.	8 ft.	8 ft., 9 in.

* When these powers are used for running DeLaval Baby Separators belted direct, speed of power shaft is adjusted to 85 revolutions per minute, and 7-inch pulley is sent with power, free of charge.

For other makes of Separators, special information is required regarding diameter and speed of pulley on same. If power is to be belted to overhead shafting, we send 10-inch pulley without extra charge.

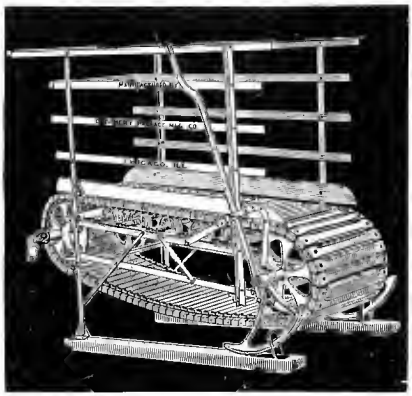
† Special sizes made to order.

If possible, when ordering power, let us know what machines are to be run by it. We can frequently make useful suggestions in this connection.

‡ EXTRA SIZE.—Only recommended when large horses, weighing 1,600 or 1,700 pounds each, are to be used. Furnished under these conditions at same price as two-horse power of standard size.

DOG POWER

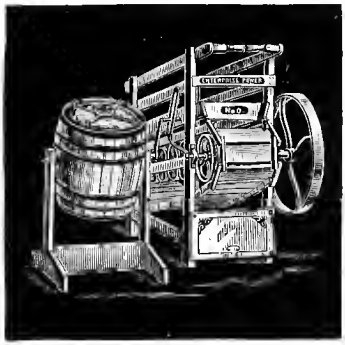
NEW STEEL FRAME



Made single and double. Perfect lever device for changing the pitch of apron according to the weight of animal. Nicely finished and painted. Furnishes ample power for cream separators, churns, mills, shellers, small machines and pumping water. Furnished with tumbling rod, slip knuckle, pulley and balance wheel, any size.

PRICES.

Single $20 00
Double 26 00



"ENTERPRISE"

PRICE.

No. 0 power, as per cut..... $12 00
No. 1 " kind required to run dash churn..... 15 00

STRAINERS

MORE'S "PYRAMIDAL"

We sell large numbers of these to Chicago milk dealers, and they all say: "I wish my farmer used them." The brass straining cloth is of so fine a mesh that no cheese cloth is required, and yet the dirt never settles where it can clog.

PRICES.

Strainer, with rest or funnel..... each, $1 50
" " " and " ..... " 1 65
Extra rests or funnels..... " 15
" strainers..... " 40

"COMMON" MILK CAN

This is made of very heavy tin. Has a combined wire strainer and flannel cloth strainer holder. It will fit a milk can, Cooley or the Common Sense Setters.

PRICE.

Each..... $1 00

"LAKIN" BUTTERMILK

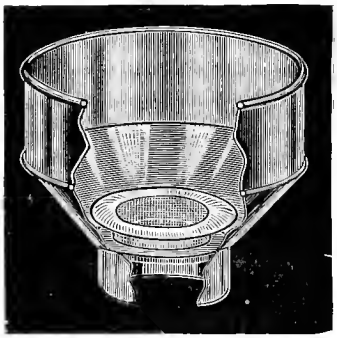
Especially adapted for dairy use.

PRICES.

No. 1. Family size..... each, $1 50

STRAINERS

THE ELGIN STRAINER



The construction of this strainer is such that there is no trouble with the clogging of the sieve. All of the sediment is collected underneath the convex disc and remains there until cleaned. This disc which has the sieve in the top fits into a sleeve in the bottom of the strainer so that it can be easily removed for cleaning.

The Elgin is a perfect strainer.

Price ..... each $2.50

SMITH'S COMBINED FUNNEL AND STRAINER

Patented Sept. 21, 1897.

Made of first-class material and on sanitary principles.

Strainer wire cone shaped, not flat, hence it will not clog, all sediment falling to outer edge of cone and straining surface greatly enlarged. Cone held in place by collar.

Threaded screw on bowl is of solid metal, and will not rust, and is perfectly smooth on inner surface. Easily cleaned. Extra ring with large strainer to hold cloth.

Small dairy strainer has funnel attachment, also a fruit jar filling attachment.

SIZES.

Large Dairy Strainer, 2½ gallons; diameter top, 17½ inches; diameter bottom, 4¼ inches; depth, 8 inches.

Small Dairy Strainer, 1 gallon; diameter top, 9½ inches; diameter bottom, 2½ inches; depth, 6 inches.

PRICES.

Large size, complete	each,	$1 25
Small " "	"	75
Extra cone wire, large	"	25
" " " small	"	15
Extra collars, large	"	25
" " small	"	15
" Ring	"	10

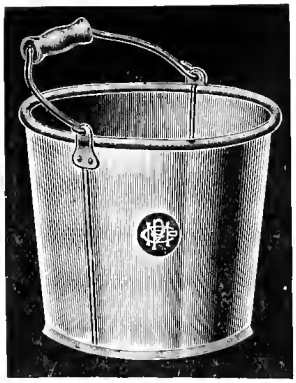
SMITH'S ADJUSTABLE STRAINER PAIL

Constructed on the same principles as the dairy strainer; made in two sizes. No clogging, perfect work.

PRICE.

12-quart	each,	$0 85
14 "	"	1 00
Extra cone wire	"	20
Extra collars	"	10

PAILS.



"IRONCLAD"

"IRONCLAD" TIN

10-quart	each,	$0 60
12 "	"	65
14 "	"	70

RETINNED "SEAMLESS" FLARING

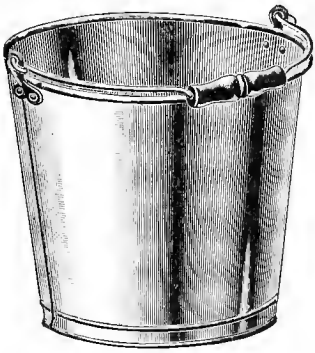
WITH PATENT SEAMLESS FOOT.

Superior to any other milk pail on the market.

6-quart,	9 x 6¾	inch	each,	$0 60
8 "	9½x 7	"	"	70
10 "	10½x 8	"	"	80
12 "	12½x 9	"	"	90
15 "	12 x10	"	"	1 00
20 "	13 x11	"	"	1 25

"SEAMLESS"

"IDEAL" MILK PAILS.



"IDEAL"

This Pail is made very strong, of XXXX tin, the top and bottom being heavily re-inforced with wire. The bottom is made of No. 22 galvanized iron. Can be furnished with tin bottoms if desired.

PRICES.

10-quart	each,	$0 70	per doz.,	$7 20
12 "	"	80	"	8 40
14 "	"	90	"	9 60

"PERFECT"

PAIL, MILK STOOL AND STRAINER IN ONE.

The milker sits on the pail and milks into the funnel. Cannot be kicked or knocked over by the cow.

Price, each.....$ 2 00

"PERFECT"

THE DE LAVAL "DAIRY" CREAM SEPARATORS

The purpose of the Cream Separator is the quick and complete separation of cream from milk in the most practical and profitable manner possible.

NATURAL FORCES ONLY

Centrifugal separation is the application of mechanical science to the natural laws governing the creaming of milk. Centrifugal force is the natural force which is generated by high velocity, or, in other words, rapid revolution. When applied to liquids or other substances of different specific gravity, or weight, centrifugal force greatly intensifies such differences, drawing the lighter particles to the center of motion and driving the heavier ones to the periphery or outer circle.

That which nature does imperfectly and with a varying degree of effectiveness in the old way, by reason of the difference in specific gravity or weight between the cream or fat particles and the other parts of milk, as utilized in the many different forms of setting appliances, the Cream Separator, by the employment of centrifugal force, quickens, makes much more thorough, and improves in every respect. Hence, while the process is seemingly mechanical, it is in reality but the addition of centrifugal force to gravity, or the uses to two natural forces combined instead of one—in conjunction with the features of mechanical construction necessary to make the process continuous and practically instantaneous.

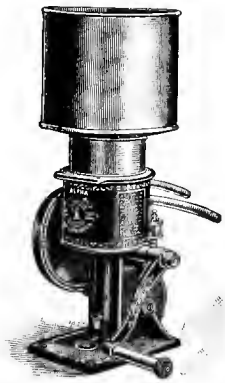
The development of these machines from the original crude models, although not rapid, has been continuous. The various stages it is unnecessary to trace here. They are a part of the history of the dairying industries.

NEW TWENTIETH CENTURY STYLES, CAPACITIES, PRICES, ETC.

September 1, 1899, marked the introduction of the Improved 20th Century "Baby" or "Dairy" sizes and styles of "Alpha" De Laval Cream Separators. These improvements denote another advance in centrifugal cream separator construction and efficiency. Great as has been the universally conceded superiority of the De Laval machines heretofore, the standard is now raised still higher. As near practical perfection as have been the De Laval Separators the past year, the latest improvements make them still better, until it is difficult today to perceive the possibilities of further improvement.

CRANK "HUMMING-BIRD" DE LAVAL CREAM SEPARATOR

(New Style No. 0)



("Alpha" or "Disc" Bowl Type)

Actual capacity, 250 pounds per hour.

Price $65.00

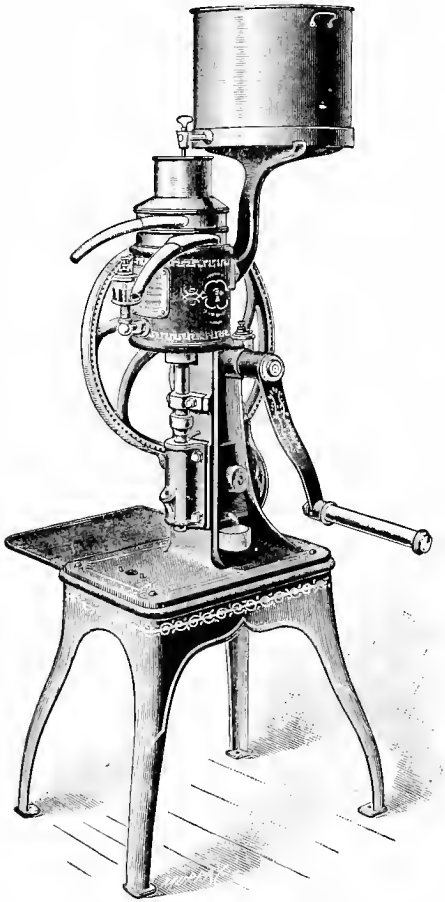
The Crank "Humming-Bird" or New Style "Baby" No. 0 is a later and somewhat improved pattern of the "Humming-Bird" size of machine, being of gear construction, and built for crank operation upon practically the same lines as the larger "Baby" machines. The 20th Century Crank "Humming-Bird" is made stronger in several constructural respects than previous machines of the same style. It possesses every advantage and improvement of the larger machines, and is meeting with a largely increasing sale, both to small dairy farmers having less than 6 or 8 cows and to owners of 1 or 2 cows for private use, and gradually into city and village homes where milk is brought for household uses. There is also a constantly increasing use of this machine by small hotels and restaurants, that cream of the best quality may be readily made as wanted, and the surplus of milk turned into superior butter. The Crank "Humming-Bird" is most extremely easy of operation, the operator sitting in running it, almost without effort.

Strap "Humming Bird," $50.00

IMPROVED "BABY" No. 1.

INCREASED CAPACITY

DE LAVAL CREAM SEPARATOR



Inclusive of handsome Iron Setting Stool

ACTUAL CAPACITY, 450 LBS. PER HOUR

"Alpha" or "Disc" bowl type

PRICE, $100.00

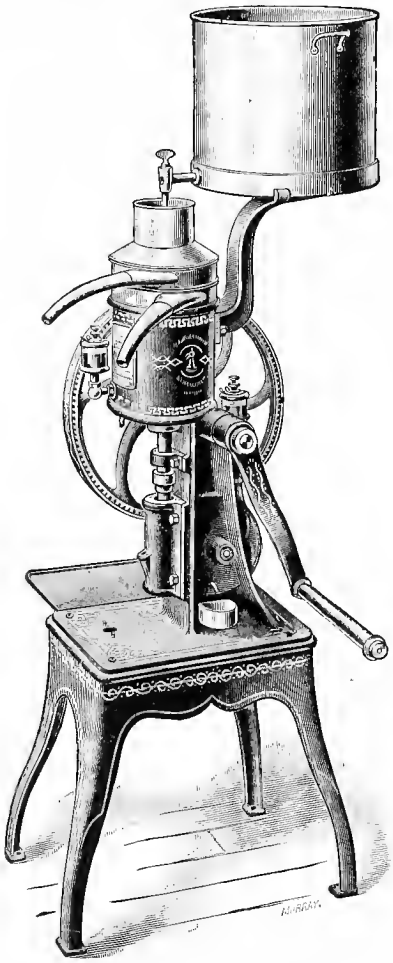
The Improved or New Style "Baby" No. 1 is a new "Alpha" disc bowl type of machine, designed especially to meet the needs of the user thinking himself unable to afford the cost of the larger capacity No. 2 machine, and preferring to give more time to the separation rather than to go beyond absolute necessity in first cost. It is simply a reduced size of the "Baby" No. 2 machine. It is intended for dairies of from five to ten or fifteen cows, though the use of the larger capacity No. 2 machine is recommended as more practicable and economical in dairies of eight or more cows. Its improved capacity is 450 lbs., and price, inclusive of handsome iron supporting stool, $100.

HOLLOW BOWL BABY No. 1, $50.00

IMPROVED "BABY" No. 2

INCREASED CAPACITY

DE LAVAL CREAM SEPARATOR



New improvements not fully shown in cut.

ACTUAL CAPACITY, 600 LBS. PER HOUR

"Alpha" or "Disc" bowl type

PRICE, $125.00

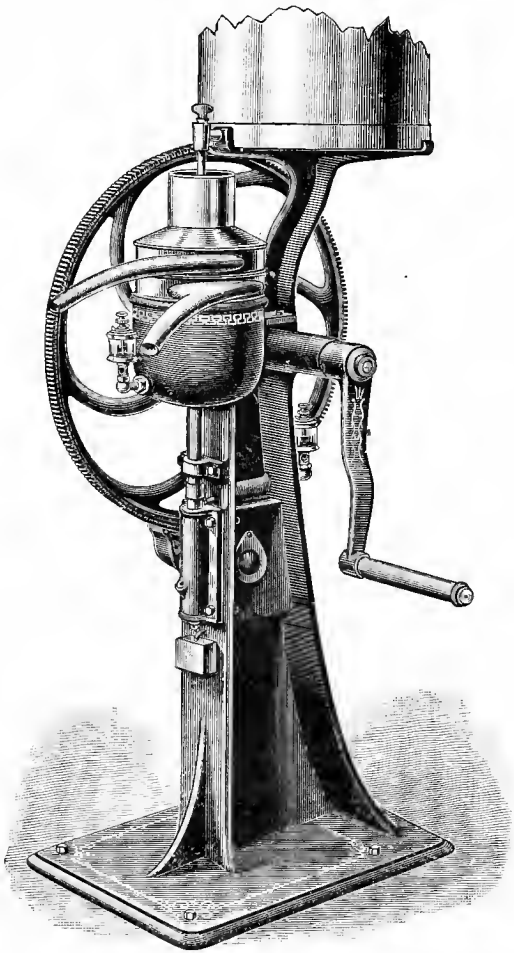
The "Baby" No. 2 is the best known and heretofore most widely used size of dairy separator, and is the machine which has been mainly instrumental in revolutionizing farm dairying. It is of the "Alpha" or disc bowl type, and as now made possesses many improvements over any previous form. It is intended for dairies of from 5 to 20 or 30 cows, and often used in even larger ones. In addition to the well-known low frame form shown in cut, it is now also made for use with a handsome iron stool, at small additional cost, and also in high or solid frame form like the "Baby" No. 3, at little greater charge, when such style of frame may be preferred. Its improved capacity is now 600 lbs., and price $125.00.

HIGH FRAME, SAME PRICE

IMPROVED "BABY" No. 3

INCREASED CAPACITY

DELAVAL CREAM SEPARATOR



ACTUAL CAPACITY, 1000 LBS. PER HOUR

"Alpha" or "Disc" bowl type

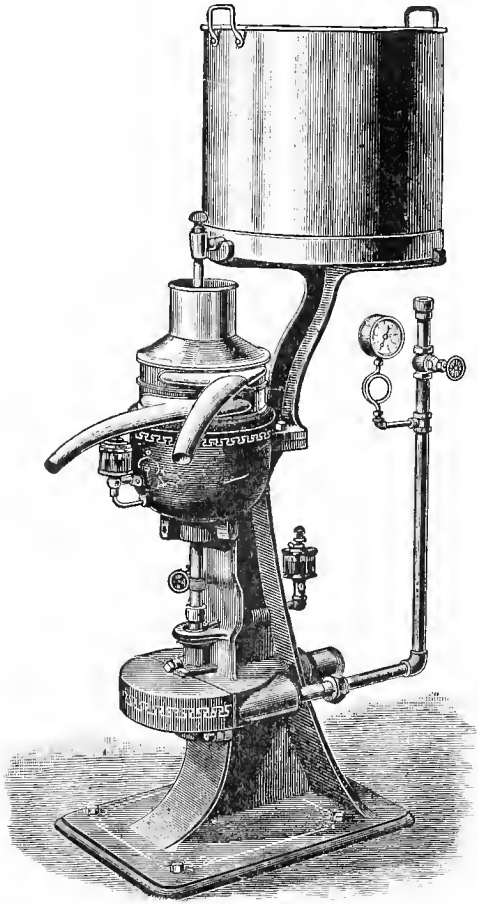
PRICE, $200.00

The "Baby" No. 3 is essentially the same as the "Baby" No. 2, other than that it is designed on a larger scale all through. It is looked upon as perhaps the most perfect of separators in symmetry of mechanical construction and general equipment. Users of separators are beginning to appreciate the many greater advantages of creaming their milk quickly, as well as the economy of saving time in separation as in everything else. The No. 3 is designed for dairies of from 20 to 75 or more cows, but is now being largely used in dairies of even 10 or 15 cows by reason of its doing the same work in half the time necessary with the No. 2. Its capacity is now 1000 pounds per hour, and price $200.

IMPROVED DAIRY TURBINE

STEAM MOTOR

DE LAVAL CREAM SEPARATOR



ACTUL CAPACITY 1000 LBS. PER HOUR

"Alpha" or "Disc" Bowl Type

PRICE, $225.00

The larger "Baby" or No. 3 machine is now also constructed in the form of a Dairy Turbine, for direct steam or boiler connection. It is of exceptional excellence in its mechanical construction and utilizes the latest improved principles of the DeLaval Steam Turbine "Creamery" machines. The Turbine power, however, is simply applicable to the separator, and this means of operation is only advisable for farm and dairy requirements where power is desired to be used with the separator but not for churning and other kindred work, in which, unless otherwise provided for, it is more necessary than in separating with the De Laval machines. Such form of power is never economical or practicable in a smaller machine, and only under these exceptional conditions with one of this size. Its capacity is 1000 lbs., and price $225.

EXTRAS AND SUPPLIES FOR

DE LAVAL ALPHA CRANK GEARED

"Humming Bird" Separator.

NAME OF PART.	NO.	PRICE.
Short Screw for securing Guard	72	$0.10
Taper Pin for Worm Wheel or Ratchet Collar	472	.10
Brush for Cover Spouts	489	.20
Top Bearing Felt	702	.01
Bowl Disc (Indented for Bowls up to No. 88,000)	706	.15
Top Disc (for Bowls up to No. 88,000)	707	.50
Disc Wing and Rivets (for Bowls above No. 116,100)	708	.15
Bowl Nut (for Bowls above No. 116,100)	710	.75
Bowl Ring (rubber) (for Bowls above No. 116,100)	711	.10
Milk Screw (for Bowls above No. 116,100)	713	.10
Supply Can with seat	715	2.00
Supply Plug and Hook	716 & 718	.50
Regulating Cup Covers	719	1.00
Cream Cover	720	1.00
Skim Milk Cover	721	.75
Regulating Float	723	.75
Screws for fastening down Machines (per set of 4)	729	.05
Step for Worm Screw	731	.05
Screw-Driver for Milk Screw, etc	742	.25
Top Bearing Screw	757	.05
Small Steel Oiler	759	.10
Screws for plugging holes in Bowl Housing of Frame, each	761	.05
Bowl Wrench	763	.50
Crank, complete	769	1.25
Crank Arm (or Lever), (separately)	771	.75
Crank Handle (complete except Arm)	772	.50
Crank Wood Handle	773	.25
Crank Handle Spindle	774	.35
Crank Handle Nut (separately)	775	.10
Sight Feed Lubricator	776	1.25
Ratchet Collar, with Taper Pin	777	.75
Ratchet Collar (separately)	778	.65
Ratchet Pin	780	.05
Ratchet Spring	781	.05
Shaft for Gear Wheel and Crank	782	1.25
Gear or Driving Wheel and Pin	784	3.85
Taper Pin for Gear Wheel (separately)	785	.10
Pinion for Gear Wheel	786	1.75
Guard for Gear Wheel	787	1.00
Long Screw for securing Guard	788	.15
Long Bushing for Pinion Shaft	789	.75
Short Bushing for Pinion Shaft	790	.50
Worm Wheel	792	3.75
Worm Screw	793	3.00
Lower Worm Screw Bushing	794	.75
Drip Pipe (from Worm Wheel Housing)	796	.05
Oil Drip Cup	797	.10
Top Bearing	798	1.75
Upper Worm Screw Bushing	799	.75

EXTRAS AND SUPPLIES FOR

DE LAVAL ALPHA STRAP

"Humming-Bird" Separator

Name.	Plate. In Manual.	No.	Price.
Bowl Discs, except top one (each)	I	706	$0.15
Top Bowl Disc	I	707	.50
Disc Wing, and Rivets	II	708	.25
Bowl Nut	II	710	.75
Bowl Ring (rubber)	II	711	.10
Bowl Wrench (also for top-bearing)	II	743	.50
Milk Screw	III	713	.10
Covers, Regulating Cup	I	719	1.00
Cream Cover	I	720	1.00
Skimmed Milk Cover	I	721	.75
Regulating Float	I	723	.75
Felts, per set	III	—	.05
Lower Spindle	III	730	1.25
Lower Spindle Bushing	II	732	.35
Lower Spindle Step	III	731	.05
Oiler (can)	I	759	.10
Plumb-Bob	III	735	.25
Plumb-Bob Point (in frame)	—	736	.05
Ratchet Gear (or brass wheel)	I	737	5.00
Ratchet Shaft	II	739	.50
Ratchet Shaft Pin	III	758	.05
Pawl Collar (on Strap Pulley)	II	733	.75
Set Screw, for Pawl Collar	III	734	.05
Ratchet Pawls (each)	III	741	.10
Felt in Pawl Collar	III	752	.02
Ratchet Guard	I	725	.75
Ratchet Guard Screw	III	726	.05
Ratchet Spring	II	745	.25
Ratchet Spring Case	I	748	2.50
Felt in Ratchet Spring Case	III	740	.01
Strap Pulley	I	750	1.50
Strap Pulley Screw	III	751	.15
Leather Strap	I	749	.20
Strap Handle	II	727	.05
Strap Handle Screw	III	728	.01
Screw Driver	III	742	.25
Screws, for holding frame (per set)	III	729	.05
Supply Can	I	715	2.00
Supply Hook and Plug	II	716 & 718	.50
Top Bearing, steel spring bearing style	II	755	.50
Spring, for Top Bearing, as above	II	756	1.25
Screw, for Top Bearing, as above (each)	III	757	.05
Top Bearing Felt	III	702	.01
Top Bearing, rubber ring style	II	700	.50
Bearing Ring, for above	II	701	.05

NAME OF PART.	NO.	PRICE.
Disc, Caulked, for Bowls above No. 116,100	954	$0.15
Disc, Plain, for Bowls above No. 116,100	955	.15
Disc, Top, for Bowls above No. 116,100	956	.50
Lubricator (cup only)	957	1.00
Lubricator Cup Glass	958	.25
Sight Feed Piece (and Glass)	959	.25
Wire Holder for Washing Discs	969	.15
Screw for plugging hole in base of Frame	980	.10
Disc, Top, for Bowls No. 7101A and up	992	.50
Disc, Plain, for Bowls No. 7101A and up	993	.15
Disc, Caulked, for Bowls No. 7101A and up	994	.20
Step Screw	1102	.25
Nut for same	1103	.05
Lower Worm Screw Bushing	1105	.50
Bowl Spindle and Screw	1106	2.00
Worm Screw	1107	3.00
Crosspin for Worm Screw	1108	.03
Washer for Top Bearing	1109	.75
Bowl Spindle Screws	1110	.25

EXTRAS AND SUPPLIES FOR

DE LAVAL ALPHA "BABY" No. 1 SEPARATOR

Bottom Screw (or Step), complete	500	$0.50
Screw (separately)	449	.25
Lock Nut (separately)	450	.15
Brush, for Cover Spouts	526	.15
Claw or "S" Wrench (for nuts)	490	.50
Covers, complete set	683	4.50
Top or Regulating Cover (separately)	679	1.75
Cream Cover (separately)	524	1.50
Skim-milk Cover (separately)	525	1.50
Crank, complete	620	3.00
Crank Arm or Lever (separately)	454	1.50
Crank Handle (complete except Arm)	624	1.50
Crank Handle (Wood), (separately)	451	.40
Crank Handle Spindle (separately)	452	1.00
Crank Handle Nut (separately)	453	.10
Cream Screw for Bowls after and including No. 134,601	612	.10
Cream Screw Driver	515	.10
Drip Pipe, for frame discharge	428	.10
Drip Cup	635	.75
Faucet, complete	521	.75
Faucet Shank	615	.40
Faucet Plug	616	.35
Float, for Regulating Cover	522	.75
Gear or Driving Wheel (with pin)	461	7.50
Shaft for Gear Wheel and Crank	460	1.50
Shaft for Gear Wheel, enlarged repair size	617	2.00
Taper Pin for Gear Wheel (separately)	462	.10
Guard, for Bowl Spindle	429	.75
Guard for Gearing (with three screws)	964	2.50
Screw for fastening Guard	72	.10
Set Screws for Guard (each)	479	.10
Housing for Worm Screw, etc. (without parts)	430	3.00
Housing Screws (each)	431	.10
Milk Screw, for Bowls below No. 130,500	612	.10
Milk Screw Driver	515	.10

NAME OF PART.	NO.	PRICE.
Pinion for Gear or Driving Wheel (and Pin)	463	$1.75
Taper Pin for Pinion (separately)	472	.10
Pinion on Worm Wheel Shaft	473	1.25
Long Bushing for Pinion Shaft	474	1.00
Short Bushing for Pinion Shaft	475	.50
Pinion Guard (with two screws)	478	.50
Pinion Guard Screw	479	.10
Power Pulley, for Crank Shaft	455	2.50
Power Pulley, with small Hand Crank attached	626	3.50
Pulley Crank Piece (separately)	491	1.00
Set-Screw for Crank Piece (491). (separated)	123	.10
Pinion Shaft Tight and Loose Pulleys, with Ratchet, complete	693	7.50
Ratchet Pulley (separately)	694	3.00
Loose Pulley (separately)	695	2.00
Ratchet Hub (separately)	696	2.00
Cap (separately)	697	.50
Set-Screw (separately)	284	.10
Ratchet Pin (separately)	605	.15
Ratchet Spring (separately)	52	.10
Taper Pin (separately)	472	.10
Belt Shifter Bracket (separately)	468	.50
Belt Shifter Bracket Set-Screw	123	.10
Belt Shifter (469 and 470), (separately)	469	.75
Belt Shifter Thumb Screw (separately)	288	.10
Pinion Shaft single Ratchet Pulley, complete	527	6.00
Ratchet Pulley (separately)	528	3.00
Ratchet Pulley Bush (separately)	529	2.50
Ratchet Pulley Pin (separately)	605	.15
Ratchet Pulley Spring (separately)	52	.10
Ratchet Pulley Collar (separately)	531	.50
Ratchet Pulley Set-Screw (separately)	321	.05
Ratchet Flange (or Collar) with Pin	623	.75
Collar (separately)	458	.65
Taper Pin for Ratchet Flange (separately)	459	.10
Ratchet Pin (separately)	456	.10
Ratchet Spring (separately)	457	.05
Rubber Ring, for Bowl Top	514	.15
Rubber Ring for Top Bearing (per half doz.)	443	.65
Screws for fastening machine to wooden table (each)	434	.05
Lag Screws for Stool	976	.05
Separating Plates (or Discs) for machines 1351A and up:		
Plain Disc	983	.20
Caulked Disc	984	.25
Bottom Disc	985	.25
Separating Plates or Discs, except top one as noted below	654	.20
Top Disc for bowls up to and including No. 130,500	698	.50
Tubular Shaft, complete for bowls up to No. 99,200	678	2.50
Disc Wing and Rivets	903	.50
Pin at bottom of (678) Tubular Shaft	904	.10
Tubular Shaft for machines 1351A and up	987	3.00
Tubular Shaft, with cast lug in bottom for bowls between Nos. 99,201 and 130,500 inclusive	940	2.50
Tubular Shaft, with cast lug for bowls above and including No. 134,601	975	2.50
Disc Wing and Rivets for (975) Tubular Shaft	978	.50
Disc Holder	939	.25
Sight Feed Lubricators, complete (495 and 675), (each)	686	1.50
Lubricator (cup only), (separately)	495	1.35
Lubricator-Cup Glass (separately)	972	.35
Sight Feed Piece (and Glass) (separately)	675	.25
Lubricator Arm and Tube	676	.60
Nut for Arm	345	.10

NAME OF PART.	NO.	PRICE.
Wrench for Lubricator Arm Nut	918	$0.35
Small Steel Oil Feeder	618	.15
Spindle Shield	971	.50
Spanner Wrench, for Bowl Top	516	.75
Bowl-holding Plate and Pins	551	.25
Screws for Bowl-holding Plate (each)	552	.03
Steel Points (each)	448	.10
Stool (Iron) to set machine on, complete with shelf and bolts	965	7.50
Screws for fastening two legs of stool together (each)	433	.10
Shelf for holding Cream Receptacle	960	1.50
Nuts for fastening shelf to stool (each)	973	.10
Bolt for fastening machine to stool (each)	943	.15
Supply Can	681	2.75
Supply Can Bracket	533	2.50
Supply Can Bracket Screw (each)	433	.10
Top Bearing (Radial Spring Style), complete with plate	948	5.00
Repair Size, No. 2 Top Bearing (Radial Spring), complete	948[2]	5.00
Repair Size, No. 3 Top Bearing (Radial Spring), complete	948[3]	5.00
Exchange of new bearing (948), complete, for worn bearing complete, postage or expressage to be prepaid on return of old bearing	—	2.50
Bearing Disc for (948) Bearing and Plate	963	.85
Screw for fastening (948) Plate to (963) Disc	691	.15
Screw for fastening (963) Disc to Frame	433	.10
Top Bearing (Rubber Ring style), for Bowl Spindle	442	1.00
Repair size, No. 2 Top Bearing	493	1.00
Repair size, No. 3 Top Bearing	494	1.00
Wooden Pin, for adjusting top bearing	499	.25
Brass Pin, for Wooden Pin (499), (separately)	631	.05
Worm Screw (or Spindle)	519	3.00
Spindle Head, for Worm Screw	518	.75
Bushing for Worm Screw (bronze)	446	.75
Bushing for base of Worm Screw (bronze)	492	.50
Worm Wheel (brass), (and Taper Pin)	476	5.00
Taper Pin for Worm Wheel (separately)	477	.10

EXTRAS AND SUPPLIES FOR

DE LAVAL ALPHA No. 2 "BABY" SEPARATOR

Bottom Screw (or Step), complete	500	$0.50
Screw (separately)	449	.25
Lock Nut (separately)	450	.15
Brush, for Cover Spouts	526	.15
Tube Cleaner, for Bowl Tubes	517	.15
Claw or "S" Wrench (for nuts)	490	.50
Covers, complete set, new style	656	5.00
Top (or Regulating) Cover, new style	657	2.00
Cream Cover, new style	658	1.75
Skim-milk Cover, new style	659	1.75
Covers, complete set, old style	610	4.50
Top (or Regulating) Cover, old style	523	1.75
Cream Cover, old style	524	1.50
Skim-milk Cover, old style	525	1.50
Crank, complete	620	3.00
Crank Arm (or Lever), (separately)	454	1.50
Crank Handle (complete except Arm)	624	1.50
Crank Handle (Wood), (separately)	451	.40
Crank Handle Spindle (separately)	452	1.00
Crank Handle Nut (separately)	453	.10

NAME OF PART.	NO.	PRICE.
Cream Screw for Bowl (after No. 44,600)	612	$0.10
Cream Screw, old style (before No. 44,600)	506	.10
Cream Screw Driver or Wrench, new style	515	.10
Cream Screw Driver or Wrench, old style	638	.25
Drip-pipe, for frame discharge	428	.10
Faucet, complete	521	.75
Faucet Shank	615	.40
Faucet Plug	616	.35
Float, for Regulating Cover	522	.75
Gear or Driving (large cog) Wheel	461	7.50
Shaft for Gear Wheel (and Crank)	460	1.50
Shaft for Gear Wheel, enlarged repair size	617	2.00
Taper Pin for Gear Wheel	462	.10
Guard, for Bowl Spindle	429	.75
Guard for Gearing	962	2.50
Top Screw for Guard	72	.10
Set Screw for Guard	479	.10
Housing for Worm Screw, etc. (without parts)	430	3.00
Housing Screws (each)	431	.10
Iron Stool for setting Separator on (complete)	965	7.50
Shelf for same (separately)	960	1.50
Pinion for Gear or Driving Wheel	463	1.75
Taper Pin for Pinion	472	.10
Pinion or Worm Wheel Shaft	473	1.25
Long Bushing for Pinion Shaft	474	1.00
Short Bushing for Pinion Shaft	475	.50
Pinion Guard	478	.50
Pinion Guard Screw	497	.10
Power Pulley, for Crank Shaft	455	2.50
Power Pulley, with small Hand Crank attached	626	3.50
Pulley Crank Piece (separately)	491	1.00
Set-Screw for Crank Piece (491), (separately)	123	.10
Pinion Shaft Tight and Loose Pulleys, with Ratchet, complete set, new style	693	7.50
Ratchet Pulley	694	3.00
Loose Pulley	695	2.00
Ratchet Hub	696	2.00
Cap	697	.50
Set Screw	284	.10
Ratchet Pin	605	.15
Ratchet Spring	52	.10
Taper Pin	472	.10
Belt Shifter Bracket	468	.50
Belt Shifter Bracket Set-Screw	123	.10
Belt Shifter (469 and 470)	460	.75
Belt Shifter Thumb Screw	288	.10
Pinion Shaft Tight and Loose Pulleys, without Ratchet, complete set, old style	622	6.00
Belt Pulley, Tight	464	2.50
Belt Pulley, Loose	465	2.00
Belt Pulley Collar	466	.50
Belt Pulley Collar Set-Screw	467	.10
Belt Shifter Parts (same as above)	—	—
Pinion Shaft Flat Belt Ratchet Pulley, complete	527	6.00
Ratchet Pulley (separately)	528	3.00
Ratchet Pulley Bush (separately)	529	2.50
Belt Pulley Pin (separately)	605	.15
Ratchet Pulley Spring (separately)	52	.10
Ratchet Pulley Collar (separately)	531	.50
Ratchet Pulley Set-Screw (separately)	321	.05
Ratchet Flange (or Collar) with Pin	623	.75
Taper Pin for Ratchet Flange (separately)	450	.10
Ratchet Pin	456	.10

NAME OF PART.	NO.	PRICE.
Ratchet Spring	457	$0.05
Rubber Ring, for Bowl Top	514	.15
Rubber Ring for Top Bearing (per half doz.)	443	.65
Screws for fastening iron stool to floor or machine to wooden stand, each	434	.10
Screw and Nut for fastening machine to stool	943	.15
Separating Plates (or Discs) for machines 1351A and up:		
Plain Disc	983	.20
Caulked Disc	984	.25
Bottom Disc	985	.25
Separating Plates (or Discs) for 350 lbs. capacity bowl and notched for tubular shaft, each	654	.20
Tubular Shaft for machines 1351A and up	986	3.50
Tubular Shaft (with cast cup) for notched discs, as above	917	3.00
Tubular Shaft, Base Screw	904	.10
Tubular Shaft (with cast cup and lug instead of pin), as above	942	3.00
Tubular Shaft, plain, for notched discs, as above	651	2.25
Disc Wing (and rivets), (separately)	653	.50
Supporting Wing (and rivets), (separately)	652	.25
Separating Plates (or Discs) for 350 lbs. capacity bowl, but without notches:		
All Discs, except bottom one, as above	610	.20
Bottom Disc, as above	611	.25
Tubular Shaft, as above	609	2.00
Separating Plates (or Discs), 300 lbs. capacity bowl, prior to No. 49,600:		
All Discs, except top and bottom ones, each	512	.15
Top Discs, old style, as above	511	.20
Bottom Discs, old style, as above	513	.20
Tubular Shaft, old style, as above	510	1.50
Disc Holder	939	.25
Separate Sight Feed Lubricators, complete (495 and 675), each	686	1.50
Lubricator (cup only)	495	1.35
Lubricator Cup Glass	—	.35
Sight Feed Piece (and Glass)	675	.25
Lubricator Arm and Tube	676	.60
Nut for Arm	345	.10
Wrench for Lubricator Arm Nut	918	.35
Small Steel Oil Feeder	618	.15
Oil Drip Cup	635	.75
Twin Sight Feed Lubricators, complete set	621	4.00
Sight Feed Cups (each)	495	1.35
Sight Feed Bracket and Tubes	496	1.35
Brass double-tube Oil Cup	480	1.50
Old Style single-tube Top Bearing Oil Cup	627	1.25
Old Style single-tube Worm Wheel Oil Cup	481	1.00
Wick-wires (and Wicks), old style, per doz	482	.25
Screws for fastening all Oil Cups, each	72	.10
Shield for Bowl Spindle	971	.50
Spanner Wrench for Bowl Top	516	.75
Bowl-holding Plate and Pins	551	.23
Screws for Bowl-holding Plate (each)	552	.03
Steel Point (per half doz.)	448	.50
Supply Can, large size (after machine No. 44,400)	534	3.00
Supply Can (size prior to machine No. 44,400)	520	2.00
Supply Can Bracket (after machine No. 44,400)	533	2.50
Supply Can Bracket (prior to machine No. 44,400)	502	2.00
Supply Can Bracket Screw (each)	433	.10
Top Bearing (Radial Spring Style), complete, with plate (after machine No. 121,501)	948	5.00

NAME OF PART.	NO.	PRICE.
Repair Size, No. 2 Top Bearing (Radial Spring), complete	948[2]	$5.00
Repair Size, No. 3 Top Bearing (Radial Spring), complete	948[3]	5.00
Exchange of new Bearing (948), complete, for worn Bearings complete, postage or expressage to be prepaid on return of old bearing	—	2.50
Bearing Disc, for (948) Bearing and Plate	963	.85
Screw for fastening (948) Plate to (963) Disc	691	.15
Screw for fastening (963) Disc to Frame	433	.10
Top Bearing (Vertical Spring Style), complete	687	2.00
Repair Size, No. 2 Top Bearing, complete	908	2.00
Repair Size, No. 3 Top Bearing, complete	909	2.00
Top Bearing Disc	663	.85
Top Bearing Plate	920	2.00
Cap Screws for Plate (each)	433	.10
Screws for Top Bearing Disc (each)	691	.15
Bearing Set-Screw (each)	906	.15
Top Bearing (Rubber Ring Style) (iron)	442	.75
Top Bearing (Rubber Ring Style), (bronze)	442	1.00
Repair Size, No. 2 Top Bearing	493	1.00
Repair Size, No. 3 Top Bearing	494	1.00
Wooden Pin, for adjusting top bearing	499	.25
Brass Pin, for Wooden Pin (499), (separately)	631	.05
Worm Screw (or Spindle), N. S. with loose head	519	3.00
Worm Screw (or Spindle), O. S. with cross pin	445	3.00
Spindle Head, for N. S. Worm Screw	518	.75
Bushing for Worm Screw (bronze)	446	.75
Bushing for base of Worm Screw (bronze)	492	.50
Set Screw for Worm Screw Bushing	447	.10
Worm Wheel (brass)	476	5.00
Taper Pin for Worm Wheel	477	.10

EXTRAS AND SUPPLIES FOR

DE LAVAL ALPHA "BABY" No. 2

High Frame — Differing from Low Frame

Gear or Driving (large cog) Wheel	961	$7.50
Taper Pin for Gear Wheel, old style, for machines below 92,700	462	.10
Large Shaft Bushing	673	.75
Small Shaft Bushing	674	.60
Power Pulley, for Crank Shaft for machines above 109,005	558	3.00
Screws for fastening down machine (each)	539	.10
Separating Plates (or Discs), (each)	654	.20
Disc Wing for 917 Tubular Shaft	927	.40
Bearing Set Screw Shoe for machines below 92,700	916	.10

EXTRAS AND SUPPLIES FOR

DE LAVAL ALPHA No. 3 "BABY" SEPARATOR

Bottom Screw (or Step) complete	500	$0.50
Screw (separately)	449	.25
Lock Nut (separately)	450	.15
Brush, for Cover Spouts	526	.15
Tube Cleaner, for Bowl Tubes	169	.15
Claw or "S" Wrench (for nuts)	490	.50

NAME OF PART.	NO.	PRICE.
Covers, complete set	594	$7.00
Top (or Regulating) Cover (separately)	589	2.25
Cream Cover (separately)	590	2.25
Skim-milk Cover (separately	591	2.50
Crank, complete	641	3.00
Crank Arm (or Lever) (separately)	557	1.50
Crank Handle (complete except Arm)	624	1.50
Crank Handle Nut (separately)	453	.10
Cream Screw, for Bowl	158	.15
Cream Screw Wrench	168	.15
Drip Pipe, for frame discharge	593	.10
Driving (or large Gear) Wheel	563	12.50
Shaft for Driving Wheel and Crank	562	1.75
Bushing for Driving Wheel Shaft (each)	565	.75
Taper Pin for Driving Wheel	564	.15
Faucet, complete	587	1.00
Faucet Shank	595	.60
Faucet Plug	596	.40
Feeding Can, large size (after machine No. 44,190)	599	4.00
Feeding Can (size prior to machine No. 44,191)	586	3.00
Feeding Can Bracket (after machine No. 44,190)	598	3.00
Feeding Can Bracket (prior to machine No. 44,191)	538	2.50
Feeding Can Bracket Screw (each)	431	.10
Float, for Regulating Cover	522	.75
Guard, for Bowl Spindle	429	.75
Housing (without parts), for Worm Screw, etc	537	3.00
Housing Screws, each	431	.10
Lag Screws, for base of machine, each	539	.10
Pinion for Driving or Gear Wheel	566	2.50
Pinion or Worm Wheel Shaft	574	1.25
Bushing for Pinion Shaft	576	1.50
Screw for Pinion Shaft Bushing, each	577	.10
Nut for Pinion Shaft	575	.10
Pinion Guard	579	.50
Pinion Guard Screw	577	.10
Power Pulley, for Crank Shaft	558	3.00
Power Pulley, with small Hand Crank attached	644	4.50
Pulley Crank Piece (only)	491	1.00
Set Screw for Crank Piece (491)	123	.10
Pinion Shaft, Tight and Loose Pulleys, complete	572	6.00
Belt Pulley, Tight	567	2.00
Belt Pulley, Loose	568	2.00
Belt Pulley Shifter, complete	569	2.00
Belt Shifter Bracket	570	.75
Belt Shifter Bracket Set Screw	123	.10
Belt Shifter (470 and 571)	—	1.25
Belt Shifter Thumb Screw	288	.10
Pinion Shaft flat belt Ratchet Pulley, complete	601	6.00
Ratchet Pulley	602	3.00
Ratchet Pulley Bush	603	2.50
Ratchet Pulley Washer	604	.20
Ratchet Pulley Pin	605	.20
Ratchet Pulley Spring	52	.10
Ratchet Flange (561), with Taper Pin	642	1.00
Taper Pin for Ratchet Flange (separately)	459	.15
Ratchet Pin (separately)	559	.15
Ratchet Spring (separately)	560	.10
Rubber Ring, for Bowl Top	550	.20
Rubber Ring, for Top Bearing (per half doz.)	443	.65
Separating Plates or Discs for all bowls after 116,000:		
Discs with strips caulked on	946	.50
Plain Disc (except top and bottom discs)	945	.35
Heavy Plain Disc for top and bottom	947	.50

NAME OF PART.	NO.	PRICE.
Separating Plates (or Discs) for Machine 4201A and up:		
Plain Disc	988	$0.35
Caulked Disc	989	.50
Bottom Disc	990	.50
Separating Plates (or Discs) for all bowls after No. 51,900 up to 99,300	633	.25
Tubular Shaft for Machines 4201A and up	991	5.00
Tubular Shaft, attached bottom cup	921	4.00
Disc Wing, with Rivets, for Tubular Shaft, No. 921, separately	922	.75
Tubular Shaft, without attached cup	632	2.00
Disc Wing, with Rivets, for Tubular Shaft, No. 632, separately	634	.75
Disc Holder (for cleaning)	966	.30
Separating Plates (or Discs), all Bowls prior to machine No. 51,900:		
All Discs, old style, except top one, each	549	.25
Top Discs, old style, as above	548	.35
Tubular Shaft, old style as above	546	3.50
Disc Wing, with Rivets, for tubular shaft (separately	547	.75
Sight Feed Lubricators, after machine No. 95,982:		
Cup, complete, each	686	1.50
Lubricator (cup only)	495	1.35
Lubricator-Cup Glass	972	.35
Sight-Feed Piece (and Glass)	675	.25
Upper Lubricator Arm	676	.75
Back Lubricator Arm	685	.60
Nut for Arm	345	.10
Wrench for Lubricator Arm Nut	918	.35
Sight Feed Lubricators, prior to machine No. 95,982:		
Sight Feed Lubricators, Upper one, complete	645	2.35
Sight Feed Lubricator, Lower one, complete	646	2.50
Upper Sight Lubricator, cup only	495	1.35
Lower Sight Lubricator, cup only	639	1.35
Upper Lubricator Bracket, separately	606	1.00
Lower Lubricator Bracket, separately	607	1.15
Spindle Shield	970	.60
Brass Top Oil-Cup, old style	582	1.25
Brass Lower Oil-Cup, old style	583	1.50
Wick-wires (and Wicks), old style, per doz	482	.25
Screws for fastening all Oil Cups, each	72	.10
Oil Catcher, under housing	585	1.00
Drip Pipe, for oil, under housing	584	.10
Small Steel Oil Feeder	618	.15
Spanner Wrench, for Bowl Top	553	1.00
Bowl holding Plate and Pins	551	.25
Screws for Bowl holding Plate, each	552	.03
Steel Points (per half doz.)	448	.50
Top Bearing (Radial Spring style), complete with plate	967	5.00
Repair Size, No. 2 Top Bearing (Radial Spring)	967^2	5.00
Repair Size, No. 3 Top Bearing (Radial Spring)	967^3	5.00
Exchange of new bearing (967), complete, for worn bearing, complete, postage or expressage to be prepaid on return of old bearing	—	2.50
Bearing disc for (967) Bearing	963	.85
Screw for fastening Bearing (967) to Disc (963)	691	.15
Screw for fastening Disc (963) to Frame	433	.10
Top Bearing (Vertical Spring Style), complete	687	2.00
Top Bearing Set-Screw	906	.15
Top Bearing Plate	920	2.00
Top Bearing Plate Disc	663	.85
Top Bearing Disc Screw	691	.15
Top Bearing Plate Screw	433	.10

NAME OF PART.	NO.	PRICE.
Repair size, No. 2, Spring Bearing, complete	908	$2.00
Repair size, No. 3, Spring Bearing, complete	909	2.00
Top Bearing, plain style, iron	442	.75
Top Bearing, plain style, bronze	442	1.00
Repair size, No. 2 Top Bearing, plain style	493	1.00
Repair size, No. 3 Top Bearing, plain style	494	1.00
Wooden Pin, for adjusting bearing	499	.25
Brass Pin, for Wooden Pin (499)	631	.05
Worm Screw (or Spindle)	555	3.00
Spindle Head, for Worm Screw	554	.75
Bushing for Worm Screw (bronze)	556	1.00
Bushing for base of Worm Screw (bronze)	492	.50
Worm Wheel (brass)	578	5.00
Shield for Worm-Wheel Opening	581	.25
Screw for Shield	72	.10

EXTRAS AND SUPPLIES FOR

DE LAVAL ALPHA DAIRY TURBINE

Indicator Clamp	29	$0.25
Indicator Wheel and Post	30	1.65
Screws for fastening Oil Cups	72	.05
Brass Oil Cup for lower mechanism	124	1.25
Steam Connections, outside piping, complete set	130	4.00
Steam Gauge Siphon	131	1.35
Steam Gauge	132	5.00
Pressure Regulator, governing steam pressure	133	12.50
Cream Screw for Bowl	158	.15
Cream Screw Wrench	168	.15
Tube Cleaner, for Bowl Tubes	169	.15
Pet Cock, for lower oil discharge	228	.25
Indicator Clamp Screw	288	.10
Nut for Lubricator Arms	345	.10
Set Screw for Steam Nozzle	346	.15
Guard for Bowl Spindle	429	.75
Screw for Spindle Guard or Supply Can Bracket	431	.10
Screw for Steam Wheel Cap	433	.10
Steel Point (separately)	448	.10
Bottom Screw (separately)	449	.25
Bottom Screw Lock Nut (separately)	450	.15
Lower Spindle Taper Pin	477	.15
Wick-wire and Wicks (for Cup 124), per doz	482	.25
Claw or "S" Wrench (for screws)	490	.50
Bottom Screw or Step, complete	500	.50
Float, for regulating cover	522	.75
Brush for Cover Spouts	526	.15
Screw, holding down	539	.10
Rubber Ring, for Bowl Top	550	.20
Bowl-holding Plate and Pins	551	.25
Screw for Bowl-holding Plate	552	.03
Spanner Wrench for Bowl Top	553	1.00
Faucet, complete	587	1.00
Top or Regulating Cover (separately)	589	2.25
Cream Cover (separately)	590	2.25
Skim-milk Cover (separately)	591	2.50
Drip Pipe, for frame discharge	593	.10
Covers, complete set	594	7.00
Faucet Shank (separately)	595	.60
Faucet Plug (separately)	596	.40
Supply Can Bracket	598	3.00

NAME OF PART.	NO.	PRICE.
Supply Can	599	$4.00
Front Lubricator Bracket and Tube, for machines below No. 63,994	606	1.00
Small Steel Oil Feeder	618	.15
Tubular Shaft, for use with Indented Discs (633)	632	2.00
Indented Discs for all machines up to No. 99,232	633	.25
Disc Wing with Rivets for Tubular Shaft No. 632 (separately)	634	.75
Top Bearing Disc	663	.85
Steam Wheel (and Spindle)	664	17.50
Lower Spindle (and Point)	665	1.25
Upper Bushing (for Lower Spindle)	666	1.50
Lower Bushing (for Lower Spindle)	667	1.50
Steam Nozzle	669	1.35
Sight Feed Piece and Glass	675	.25
Front Lubricator Arm and Tube, for machines below No. 95,982	676	.75
Lower Spindle Head	684	1.25
Back Lubricator Arm, for all machines	685	.60
Separate Sight Feed Lubricators (complete, 495 and 675 each)	686	1.50
Top Bearing (Vertical Spring Style), complete	687	2.00
Top Bearing Set Screw	690	.20
Screws for 967 and 663	691	.15
Steam Exhaust Connection	692	.50
Repair Size, No. 2, Vertical Spring Top Bearing, complete	908	2.00
Repair Size, No. 3, Vertical Spring Top Bearing, complete	909	2.00
Bushing Extractor (complete)	911	.75
Wrench for Lubricator Arm Nuts	918	.35
Tubular Shaft, attached bottom cup style	921	4.00
Disc Wing and Rivets for Tubular Shaft No. 921, separately	922	.75
Disc, Plain Intermediate, for machines above No. 118,501	945	.50
Disc, Caulked Intermediate, for machines above 118,501	946	.35
Disc, Plain Top or Bottom, for machines above 118,501	947	.50
Top Bearing Disc for Top Bearing No. 967	963	.85
Wire-holder for Washing Discs	966	.15
Top Bearing, Radial Spring Style, complete with plate	967[1]	5.00
Top Bearing, Radial Spring Style, Repair Size No. 2, complete	967[2]	5.00
Top Bearing, Radial Spring Style, Repair Size No. 3, complete	967[3]	5.00
Exchange of New Bearing complete, for Worn Bearing complete (expressage to be prepaid on return of old bearing)	—	2.50
Lubricator Cup Glass (separately)	972	.35
Disc, Plain, for all machines above No. 7558A	988	.35
Disc, Caulked, for all machines above No. 7558A	989	.50
Disc, Bottom, for all machines above No. 7558A	990	.50
Tubular Shaft, for all machines above No. 7558A	991	5.00
Spindle Shield	999	.60
Faucet	1157	1.25

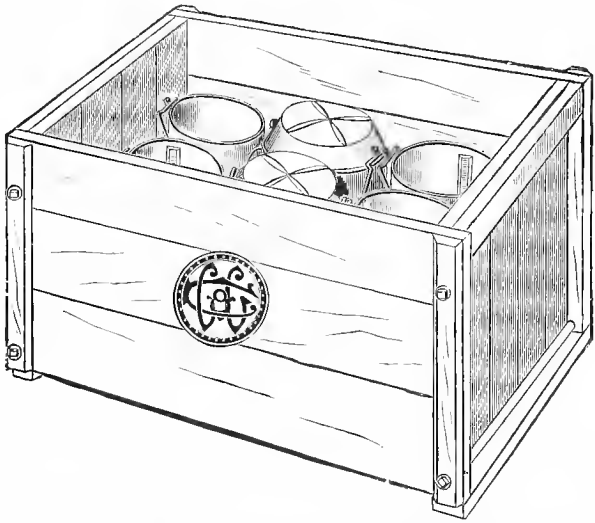
PRICE LIST OF EXTRAS
FOR
"MIKADO" EMPIRE CREAM SEPARATOR

No.		Price.
1	Cream Pan (Covers)	$3.50
1a	Top Cover, alone	1.25
1b	Cream Cover, alone	1.00
1c	Skimmed Milk Cover, alone	1.00
2	Milk Can	2.00
3	Faucet	.75
4	Float	.50
5	Bracket for Milk Can	1.00
6		
7	Crank, with Handle, complete	1.50
7a	Handle, with Shaft	.75
8	Driving Wheel, large	3.25
9	Shaft for above	1.00
10	Steel Point or Step for Spindle	.10
11	Bowl Rubber Ring	.12
12	Spanner Wrench for Bowl	.75
13	Large Brush for Cleaning	.20
14	Tube Cleaners, each	.15
15	Interior Skimming Device for Bowl	4.50
16	Cream Screw for Bowl	$0.10
17	Neck Bearing, complete	1.25
18	Brass Ring for above	.13
19	Rubber Ring for above	.10
20	Steel Ball	.05
21	Nut Wrenches, each	.25
22	Worm Wheel, with Shaft, complete	7.80
23	Worm Wheel, alone	3.25
24	Shaft, for above	3.75
25	Clutch, for above	.75
26	Clutch Pin	.05
27	Side Plugs, per pair	1.40
28	Nuts, per pair	.25
29	Power Pulley, large	3.75
30	Bottom Plug, complete	1.50
31	Bronze Bushing, for above	.67
32	Step, for above	.10
33	Wick Wires, per dozen	.20
34	Bowl Vise	.65

"No. 5" EMPIRE CREAM SEPARATOR

No.		Price.
1	Cream Pan (Covers)	$5.00
1a	Top Cover, alone	2.00
1b	Cream Cover, alone	1.50
1c	Skimmed Milk Cover, alone	1.50
2	Milk Can	2.75
3	Faucet	.90
4	Float	.50
5	Bracket for Milk Can	1.00
6	Sight Feed Oil Cup	1.50
6a	Bracket Oil Tube	.35
6b	Glass for Oil Cup	.20
7	Crank, with Handle, complete	1.50
7a	Handle, with Shaft	.75
8	Driving Wheel, large	4.00
9	Shaft for above	1.00
10	Steel Point or Step for Spindle	.15
11	Bowl Rubber Ring	.15
12	Spanner Wrench for Bowl	1.00
13	Large Brush for Cleaning	.50
14	Tube Cleaners, each	.15
15	Interior Skimming Device for Bowl	8.50
16	Cream Screw for Bowl	.20
16a	Wrench for Cream Screw	$0.20
17	Neck Bearing, complete	2.75
17a	Check Nuts, each	.30
18	Brass Ring for above	.17
19	Rubber Ring for above	.20
20	Steel Ball	.06
21	Nut Wrenches, each	.25
21a	Nut Wrench, special for Empire No. 5	.25
22	Worm Wheel with Shaft, complete	8.25
23	Worm Wheel, alone	3.80
24	Shaft, for above	4.00
25	Clutch, for above	.82
26	Clutch Pin	.05
27	Side Plugs, per pair	1.40
28	Nuts, per pair	.25
29	Power Pulley, large	4.00
30	Bottom Bearing, complete	3.50
31	Bronze Bushing, for above	.75
32	Bottom Plug	.50
32a	Check Nuts, each	.30
33	Wick Wires, per dozen	.20
34	Bowl Vise	.85

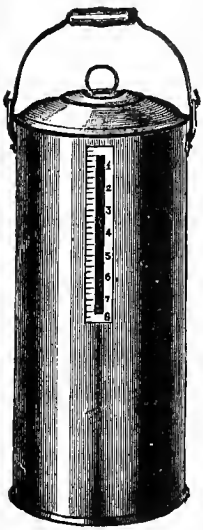
TANK FOR DEEP SETTING CANS.



These tanks are made from two-inch lumber and the ends securely clamped and fastened with rods. We ship them in the "knock down" or set up. They are all provided with covers. They are sufficiently deep for the Cooley or Submerged can. They are intended for any deep setting can.

SIZES AND PRICES.

No. 1, 4 cans	$6 50	No. 3, 8 cans	$10 00
No. 2, 6 "	7 50	No. 4, 10 "	12 00



COMMON-SENSE SETTERS.

Without glass gauge or cover	$0 60
Gauge and no cover	70
With cover and no gauge	70
With glass gauge and cover	80

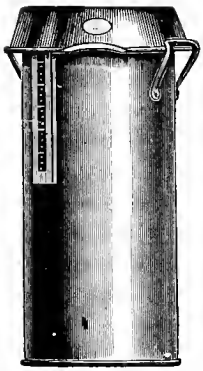
In 100 lots a liberal discount allowed from above prices.

CREAM CAN GAUGES.

Per dozen $1 10

CONICAL SKIMMERS.

Each ..... $0 20 Per dozen $1 75



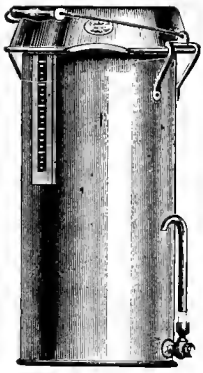
Plain Cooley Can, for gathered cream.

COOLEY CANS.

PRICES.

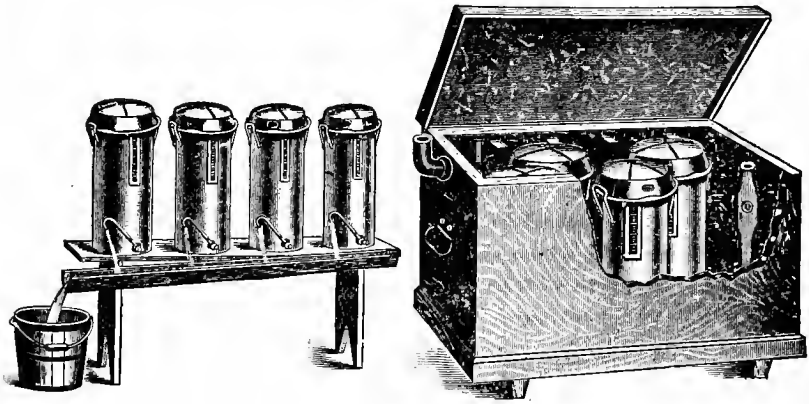
18 quart with skimmer . . each,		$2 00
In 100 lots	"	1 75
18 quart, plain	"	1 50
In 100 lots	"	1 25
Skimmers	"	70

12 quart cans furnished at above prices.



Spout Can.

COOLEY CREAMER.



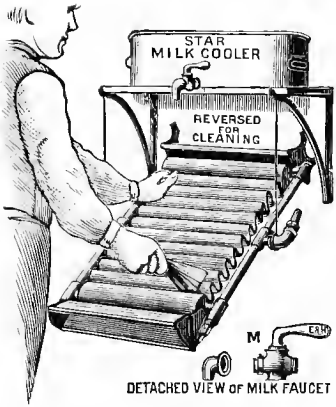
SIZE, CAPACITY AND PRICES.

No. 0,	for 1	can,	milk of 1 cow,	18 quarts						$18 00
" 00,	" 2	cans,	milk of 2 to 4 cows,	36 quarts						25 00
" 1,	" 3	"	size 25 x 32 in.,	milk of 6 to 9 cows,	51 qts					28 00
" 2,	" 4	"	" 28 x 38 "	" 9 to 12	"	68	"			30 00
" 3,	" 6	"	" 28 x 49 "	" 12 to 18	"	102	"			40 00
" 4,	" 8	"	" 28 x 61 "	" 18 to 24	"	136	"			50 00
" 5,	" 10	"	" 28 x 72 "	" 24 to 30	"	170	"			60 00
" 6,	" 12	"	" 28 x 84 "	" 30 to 36	"	204	"			70 00

Above prices include cans with bottom faucet and glass panel in the side of can, showing depth of cream.

STAR MILK AERATER AND COOLER

Standard Sizes—Made in Two Styles



Plain Cooler, showing cleaning operation.

FIXED TROUGHS and REMOVABLE TROUGHS, either of which can be fitted with SYPHON or ELEVATED WATER SUPPLY, or both.

The water enters and discharges through frame, which hangs on centres. Cooler turns over to be cleaned and does not have to be removed from the brackets, saving time and handling. Short trough at the bottom of Cooler can be turned from one can to another without spilling milk.

PRICES:

No. 0. For use in dairies of from 14 to 15 cows and where two men milk. Made in two styles.

	REMOVABLE TROUGHS.
Price	$20 00

Prices include a twenty-quart milk tank, Star milk faucet brackets, screws, hose and barrel connection.

Syphons, extra $7 00

Fourteen inches wide, twenty-two inches high, 1,016 square inches cooling surface. Will cool fifty gallons of milk per hour to 54°, with water at 52°.

Only the best grade of copper used.

No. 1. Twenty-two inches wide, twenty-four inches high, 1,200 square inches cooling surface; for three or four milkers. Will cool sixty gallons of milk per hour to 54°, with water at 52°.

	REMOVABLE TROUGHS.
Plain Cooler, for ¾ inch fittings	$25 00
Elevated Water, complete	30 00
Syphon Attachment, complete	37 00

No. 2. Twenty-four inches wide, twenty-seven inches high, 1,700 square inches cooling surface; for four or seven milkers. Will cool ninety gallons of milk per hour at 54°, with water at 52°.

	REMOVABLE TROUGHS.
Plain Cooler, for ¾ inch fittings	$27 00
Elevated Water, complete	33 00
Syphon Attachment, complete	40 00

No. 3. Twenty-eight inches wide, thirty-one inches high, 2,760 square inches cooling surface; for six or twelve milkers. Will cool 120 gallons of milk per hour to 54°, with water at 52°.

	REMOVABLE TROUGHS.
Plain Cooler, for 1 inch fittings	$40 00
Elevated Water, complete	47 00
Syphon Attachment, complete	54 00

No. 4. Thirty-inches wide, forty-six inches high, 3,970 square inches cooling surface. Will cool 150 gallons of milk per hour to 54°, with water at 52°.

	FIXED TROUGHS.
Plain Cooler, 1¼ inch fittings	$ 80 00
Elevated Water, complete, same fittings as smaller sizes, but with 15-gallon milk tank	90 00
Syphon Attachment, complete	100 00

STANDARD COPPER MILK COOLERS.

Same style as Star Coolers.

Plain Copper Cooler	$ 8 55
With Elevated Water	14 25
Syphon Attachment	19 00

DAIRY MILK COOLERS

"CHAMPION"

Butter is better flavored, keeps better, sells better, if made from milk properly aerated and cooled by the "Champion."

Cheese factories make better cheese and more of it if all patrons use the "Champion."

Patented January 26, 1892.

SPECIAL CLAIMS

It is a perfect Aerater, removing all flavors arising from excessive cabbage, turnip or silo rations.

It is a complete deodorizer, removing the animal heat or cowy taste and all odors arising from the absorption by the milk of stable or other unpleasant gases.

It is a thorough cooler, reducing the temperature of the milk in one minute nearly to the temperature of the cooling medium.

It is equally well adapted to the use of any cooling medium, either running water, ice water, or, if a very low temperature is not required, ordinary well or spring water.

It is automatic, requiring no attention while in operation.

It is low down, greatest cooling surface at least height.

It is as simple in construction and easily cleaned as a pail.

It is durable; with proper care will last for years.

Its cost is small. It saves time and labor in handling milk for any purpose.

PRICE LIST

The following sizes of the Champion are gauged as nearly as possible to take care of the milk as fast as drawn from various sized dairies with the average number of milkers. Be sure to get one large enough, as best cooling results are obtained with low pressure of milk in the receiver.

No.	Capacity of Milk Receiver	Size of Dairy	Takes Care of	Price
1.	10 quarts	1 to 10 cows	2 Milkers	$ 7 00
2.	18 "	10 to 25 "	3 "	7 00
3.	34 "	25 to 50 "	5 "	8 00
4.	52 "	50 to 100 "	8 "	10 00

Prices include double cheese cloth strainers and spring pins.

STRAINERS

Strainers of the finest mesh wire cloth (100 meshes to the inch) furnished for each size at $1.00 each.

SHIPPING WEIGHT AND DIRECTIONS

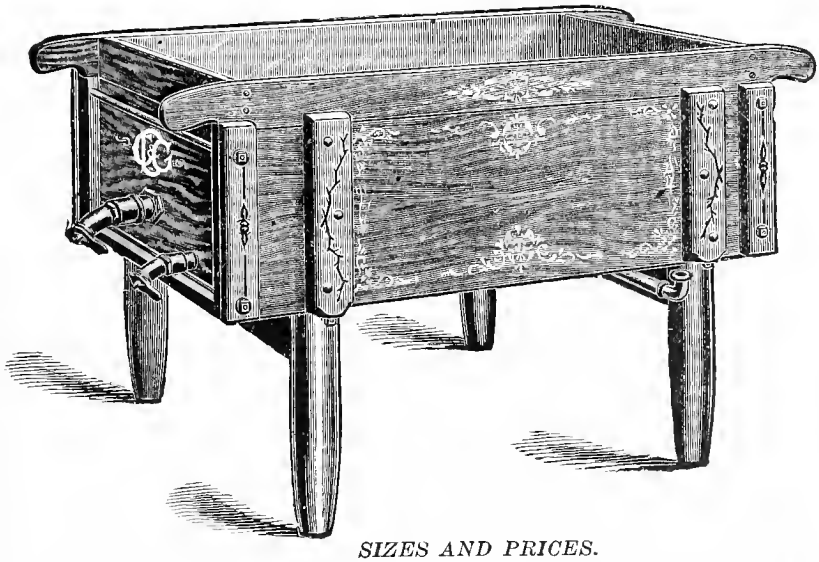
The Champion is well crated and delivered F. O. B. cars. The weights crated are as follows:

No. 1.—14 lbs. No. 2.—17 lbs. No. 3.—25 lbs. No. 4.—35 lbs.

We advise shipment of single coolers by express and of larger orders by freight.

SMALL CREAM AND CHEESE VATS.

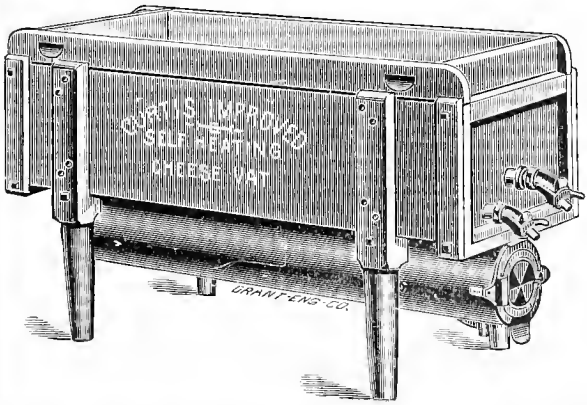
FOR PRIVATE DAIRIES.



SIZES AND PRICES.

25 gallon vat, with ice box on end	$20 00
50 " " " " " "	25 00
75 " " " " " "	32 00

SELF HEATING DAIRY CHEESE VATS

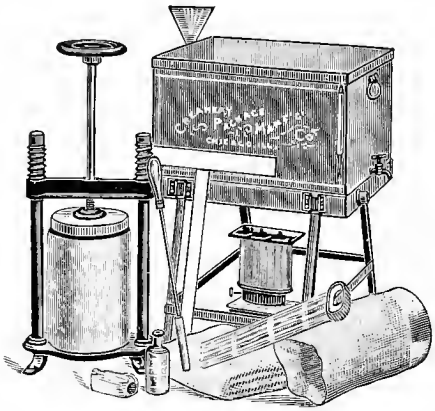


This vat is designed for large and small dairies that desire to make up their own milk into cheese. We furnish all other implements to go with it.

SIZES AND PRICES

25-gallon vat, $30 00
50 " " 32 00

FAMILY CHEESE MAKING APPARATUS



A very simple Apparatus, adapted to the wants of all farmers or dairymen. So simple that any girl or boy of average intelligence can learn the process in a very few operations. It makes perfect cheese each time, whether 5 pounds or more.

The milk is heated by a coal oil lamp, which is easily kept under control. The heating vat is so constructed that the lamp gives all the heat that is necessary. The management of the heat is the secret of success in making good cheese. It does not take up quite as much room as an ordinary kitchen table. A lady can make cheese in the kitchen or pantry, and carry on her household work at the same time.

With each machine we send simple and full instructions how to make cheese successfully.

Each Apparatus is complete with Heating Vat, Press, Curd Knife, Lamp and Thermometer. Made of good material, strong and well finished.

The Apparatus is guaranteed to do the work exactly as represented.

SIZES AND PRICES

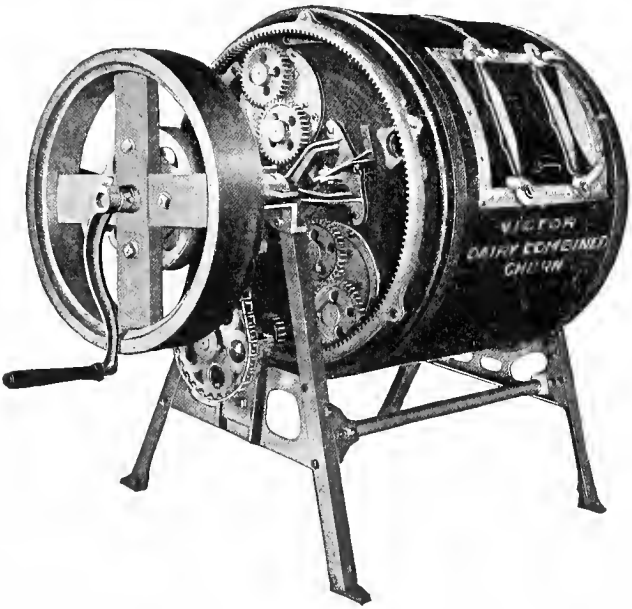
No. 1—	Capacity	10	gallons,	without	press and	hoops,	$10 00,	with	press and hoops,	$14 00
" 2—	"	20	"	"	"	"	12 00,	"	"	" 16 00
" 3—	"	30	"	"	"	"	14 00,	"	"	" 18 00

NET PRICES OF EXTRAS

Curd Knife for No. 1	$1 00	Special Wicks for Lamps, per yard	$ 1 00
" " " No. 2 or No. 3	1 50	Press, only, for No. 1	5 00
Galvanized Hoop (same size for all)	1 00	" " " No. 2	7 00
Tin Cylinder (same size for all)	50	" " " No. 3	10 00
Special Lamp for No. 1	1 00	Thermometers, each	25
" " " No. 2	2 00	Funnel, each	25
" " " No. 3	2 50	Wooden Stirrer, each	40

"Hot Iron" Test Iron 50c

"VICTOR" DAIRY COMBINED CHURN.



STYLE A1, A2 AND A3. FOR DAIRY USE ONLY.

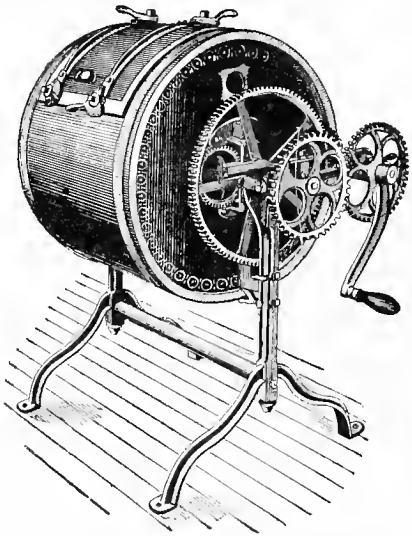
These churns have an 18-inch clutch pulley with 4-inch face, speed at 34.

For years the effort has been made to create a dairy churn that would bring the small dairy to a level with the factory in the production of first-class butter in a rapid and uniform manner. Taking the factory "Victor" as a guide, we have at last produced a strictly farmers' Combined Churn and Butter Worker, the "Dairy Victor," at a price that is within the reach of all, as complete in its operations as the now famous factory "Victor," and can be run by dog, goat, sheep or pony power. These three strictly farmers' churns are all furnished with pulley, and the A1 machine can be run by hand; a crank is furnished when desired.

SIZES AND PRICES OF DAIRY CHURNS.

No.	Diameter.	Length Outside.	Length Over all.	Capacity.	Shipping Weight.	Price.
A1	2 ft. 10 in.	1 ft. 8 in.	3 ft. 8 in.	10 to 60 lbs.	250 lbs.	$ 60 00
A2	2 ft. 10 in.	2 ft. 4 in.	4 ft. 4 in.	10 to 80 lbs.	300 lbs.	80 00
A3	2 ft. 10 in.	3 ft.	5 ft.	10 to 100 lbs.	350 lbs.	100 00

"BABY" DAIRY COMBINED CHURN.



The "Baby" is a geared machine run by hand, and so constructed that two rollers and two simple lifting boards serve to do the churning, and the working of the butter with no change of gearing.

In working, the turning of the shaft puts the rollers in motion, lifts the butter from the bottom of the churn, places it upon the rollers, and stops the churn until the butter passes downward through the rollers, then starts the churn again, and lifts the butter as before to the top of the rollers, continuing the process as long as the crank is turned.

When the churning is to be done, the working rollers are fixed (do not turn on their axis), until the time for working the butter comes, and both in churning and working the turning of the crank is all the operator has to do, as the needed changes in the gearing are made automatically, entirely relieving the operator from all trouble of placing pins, moving levers or shifting belts, no shifting of parts being necessary.

One very attractive feature of this churn, which recommends it highly, is the ease with which the butter can be removed from it. When the working is completed, the door brought to the convenient point, the churn stopped, and the door removed, it will be found that the butter is massed on the lifting board and the rollers in front of the door in the most convenient position possible for removal, and the churn is held in that position by its own devices until the work is finished.

The chief objection that has been raised against combined churns and workers for small dairies and for farm use is their cost, and in producing the "Baby" we have sought to overcome this objection by bringing out a churn so low in price as to be within the reach of all.

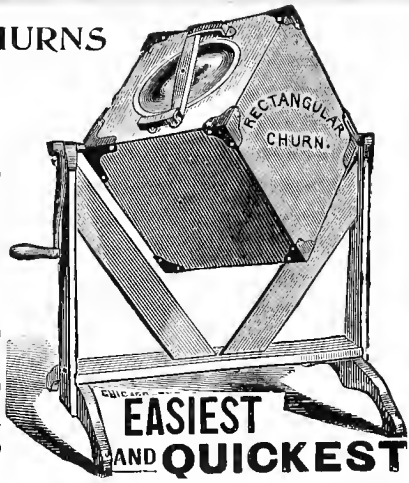
The "Baby" is made with iron supports and frame, neat, light and strong.

PRICES.

No. 1, capacity 5 to 30 pounds of butter.....$40 00
No. 2, capacity 5 to 40 pounds of butter..... 45 00

DAIRY BOX CHURNS

RECTANGULAR.



SIZES AND PRICES.

No. 0,	holding	7	gallons	.....	$ 8 00
" 1,	"	10	"	.....	8 50
" 2,	"	12	"	.....	9 00
" 3,	"	20	"	.....	10 00
" 3½,	"	26	"	.....	12 50
" 4,	"	40	"	.....	16 00
" 5,	"	60	"	.....	23 00
Tight and loose pulley,				3 x 12..	3 50
"	"		"	3 x 14..	4 00

We can furnish churn stands for any style of dairy churns at from $2.00 to $5.00 each.

The Nos. 4, 5 and 6 are adapted to large dairies, and are more convenient than the No. 5 Rectangular. They have a crank on one side, a long gudgeon for pulleys on the other. Strong bands and rods running around the churn make them very substantial.

SIZES AND PRICES.

No. 0,	holding	7	gallons	.....	$ 8 00
" 1,	"	10	"	.....	8 50
" 2,	"	12	"	.....	9 00
" 3,	"	20	"	.....	10 00
" 3½,	"	26	"	.....	12 50
" 4,	"	40	"	24 x 24 in...	16 00
" 5,	"	60	"	26 x 26 in...	23 00
" 6,	"	80	"	.....	26 00
Tight and loose pulley,				3 x 12.....	3 50
"	"		"	3 x 14.....	4 00

Prices given are without pulleys.

IDEAL DAIRY BARREL CHURNS.

No. 0.	5-gal.	churn,	churns	from 1 to	2 gal. cream.	$ 8.00
" 1.	9-gal.	"	"	" 1 to	4 "	8.50
" 2.	15-gal.	"	"	" 2 to	7 "	9.00
" 3.	20-gal.	"	"	" 3 to	9 "	10.00
" 4.	25-gal.	"	"	" 5 to	12 "	12.00
" 5.	35-gal.	"	"	" 5 to	16 "	16.00
" 5½.	45-gal.	"	"	" 5 to	22 "	22.00
" 6.	60-gal.	"	"	" 6 to	28 "	26.00
" 7.	70-gal.	"	"	" 7 to	34 "	30.00
" 8.	98-gal.	"	.....			35.00

In churning a large amount of cream in the different sizes, more time will be consumed.

Acme or Boss churn furnished where wanted.

12x3 tight and loose pulleys, per set.....$2.50

BARREL CHURN EXTRAS

"IDEAL" OR "FAVORITE"

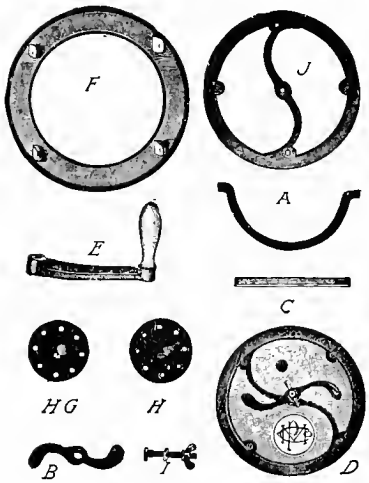


FIG. F. BARREL RIMS.

Sizes	Nos. 0 and 1	2 and 3	4 and 5
Price	50 cents.	60 cents.	75 cents.

FIG. J. COVER RIMS.

Sizes	Nos. 0 and 1	2 and 3	4 and 5
Price	25 cents.	30 cents.	40 cents.

FIG. E. CRANKS.

Sizes	Nos. 0, 1 and 2	3, 4 and 5
Price	25 cents.	30 cents.

FIG. A. BALES.

Sizes	Nos. 0, 1, 2 and 3	4 and 5
Price	10 cents.	20 cents.

FIG. C. CORK STRIPS FOR COMPLETE COVER.

Sizes	Nos. 0	1	2	3	4	5
Price	20c.	23c.	25c.	27c.	30c.	35c.

FIG. HG. SHORT TRUNNIONS AND FIG. H. CRANK TRUNNIONS.

Sizes	Nos. 0, 1, 2 and 3	4 and 5
Price	10 cents.	20 cents.

FIG. B. LOCK BUTTONS.

Each.....8 cents.

FIG. I. COVER BOLTS.

Sizes	Nos. 0, 1 and 2	3, 4 and 5
Price	8 cents.	10 cents.

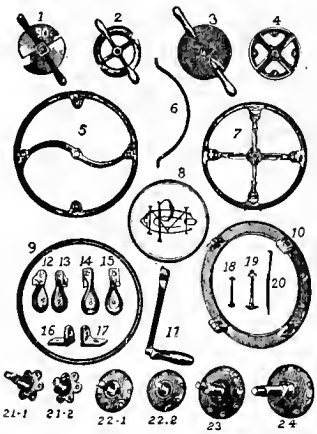
FIG. D. COVERS COMPLETE.

Sizes	Nos. 0	1	2	3	4	5
Price	60c.	70c.	80c.	90c.	$1 10	$1 25

"ACME" AND "BOSS"

FIG.	DESCRIPTION.	FOR CHURNS.	EACH.
1	Acme Bail Top Handles, all sizes,		$0 25
2	" Skeleton "	"	20
3	Boss "	"	25
4	" Skeleton "	No. 8	20
5	Cover Rims, Acme,	No. 0	25
	" " "	1	30
	" " "	2	35
	" " "	3	40
	" " "	4	50
	" " "	5	60
6	Bails, Acme,	Nos. 0, 1 and 2	10
	" "	3	15
	" "	4 and 5	20
7	Cover Rims, Boss,	No. 0	25
	" " "	1	30
	" " "	2	35
	" " "	3	40
	" " "	4 to 7	50
	" " "	5½, 8 and larger,	60
8	Balance Weights,	all Churns,	15
9	Churn Rims, Acme,	Nos. 0 and 1	50
	" " "	2	60
	" " "	3	75
	" " "	4	90
	" " "	5 and larger,	1 00
10	Churn Rims, Boss,	Nos. 0 and 1	50
	" " "	2	60
	" " "	3	75
	" " "	4	90
	" " "	5, 6 and 7	1 00
	" " "	5½, 8 and larger,	2 00
11	Crank, Boss or Acme,	Nos. 0 to 3	25
	" " " "	4 and larger,	30
12	Left Ear, Acme,	Nos. 0 to 3	05
13	Right " "	" 0 " 3	
14	Left " "	Nos. 4 and 5	07
15	Right " "	" 4 " 5	
16	Left " "	5½ and larger	
17	Right " "	5½ " "	
18	Cover Bolts, Acme or Boss, Bail T. H.		05
19	" " " " " Sk'lt'n "		

FIG.	DESCRIPTION.	FOR CHURNS.	EACH.
20	Keys, Boss,	Nos. 0 to 3	05
	" "	4 and 5	06
	" "	8	08
21-1	Crank Trunnions, Boss,	Nos. 0 and 1	20
21-2	Short " "	0 " 1	15
22-1	Crank " "	2, 3 " 4	25
22-2	Short " "	2 " 3	15
23	Crank " "	5, 6 " 7	35
24	Shaft " "	for 12 in. Pulley,	50
		" 14 " "	75
		" 18 " "	1 00
	Complete Cork for Cover,	any size, each,	25

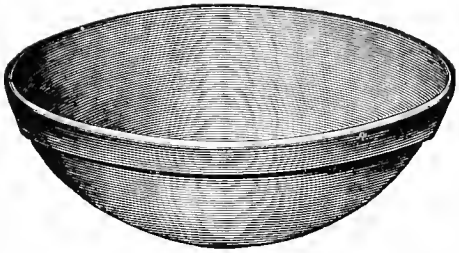


COVERS COMPLETE

"ACME"				"BOSS"			
No. 0	$0 60	No. 3	$0 90	No. 0	$0 75	No. 3	$1 25
" 1	70	" 4	1 10	" 1	75	" 4	1 50
" 2	80	" 5	1 25	" 2	1 00	" 8	3 00

Covers for our "Acme Bail" run one size larger for each size of churn than those of other manufacturers. All cover castings, except top handle, are galvanized—hence price lists of extras are not identical. When ordering repairs, give number of churn, and the number, or letter, on casting required. If casting is not numbered, describe as fully as possible. If cover or rim is required, give exact diameter, measuring from inside of opposite ears.

BUTTER TRAYS.



POLISHED MAPLE BOWLS

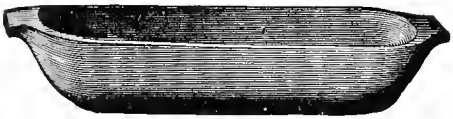
Made of the best Michigan hard maple by the latest improved bowl machinery.

Our bowls are *extra deep, heavy rimmed* and *nicely polished.*

SIZES AND PRICES.

11 inch	each,	$0 25
13 "	"	30
15 "	"	35
17 "	"	40
19 "	"	45
21 "	"	50

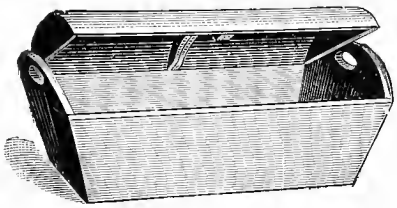
RICHARDI BUTTER TRAY.



SIZES AND PRICES.

No. 0, size 17½ x 10	each,	$0 40
" 1, " 19½ x 10½	"	50
" 2, " 21 x 11	"	75
" 4, " 23¾ x 13	"	1 00

COVERED BUTTER TRAY.



It is designed to hold the butter when taken from the churn to be re-worked and packed for market.

The oval cover, which increases the capacity of the tray one-third, is made to fit tight, to exclude bad air and dust.

FACTORY SIZES.

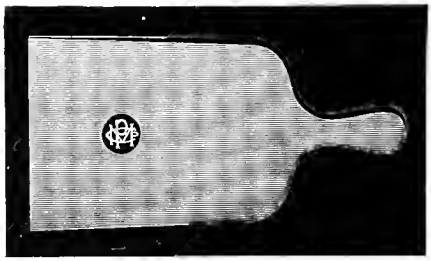
No. 1, holding 75 pounds	$3 00
" 2, " 125 "	4 00
" 3, " 175 "	5 00

FAMILY SIZES.

No. 4, holding 20 pounds	$2 00
" 5, " 40 "	2 50
" 6, " 60 "	3 00

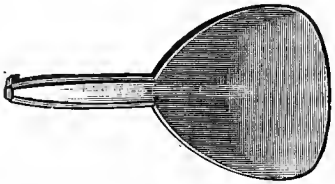
DAIRY LADLES

SMALL "DAIRY"



Each..... .....$0 20 Per dozen.....$2 25

"NEW YORK"



Small.....each, $0 20 Medium.....each, $0 30
Large.....each, $0 40

"CORRUGATED"

Each $0 15
Per set of two..... 25

These ladles are made from maple and ash, nicely finished.

WOODEN SPOONS

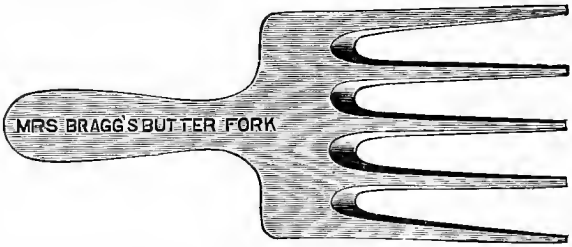
Made from clear spruce wood and nicely polished.

Can be used to advantage in stirring cream and milk in small vessels, and mixing in milk color.

They will also be found valuable for kitchen use, in stirring lemonade, etc., etc.

14 in., each, 10c.; doz., $1.00; 17 in., each, 15c.; doz., $1.25

MRS. BRAGG'S BUTTER FORK

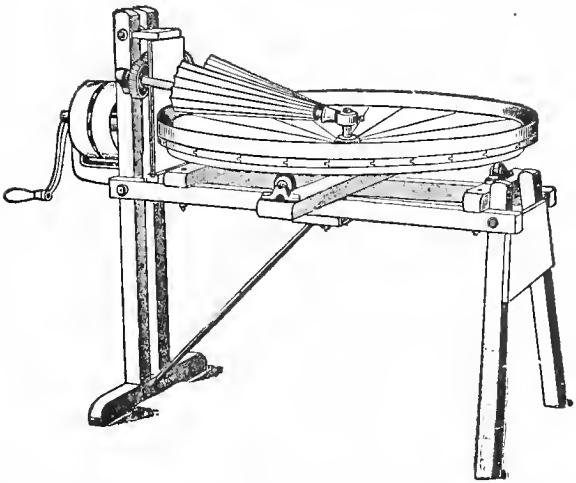


For taking lumps of butter from the churn, lifting from the worker to the tub, this fork is not excelled by anything made.

Each.....$0 25 Per dozen.....$2 50

DAIRY BUTTER WORKERS

"MASON" HAND OR POWER



The increase of the use of the small separator in the dairy has created a demand for hand or power workers of smaller capacity than that of our factory size. We are now prepared to fill orders for two sizes smaller than the factory worker.

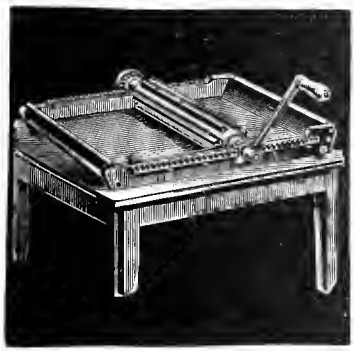
SIZES AND PRICES

No. 0. 3-ft. table, galvanized castings, capacity, 60 lbs., pulley 12x3 in., speed 60 revolutions, weight 140 lbs. $25 00
No. 1. 4-ft. table, plain castings, capacity, 75 lbs., pulley 12x3 in., speed 60 revolutions, weight 290 lbs. 35 00
No. 1. 4-ft. table, galvanized castings, capacity, 75 lbs., pulley 12x3 in., speed 60 revolutions, weight 290 lbs. 45 00

"REID"

PRICE

No. 1, size 23x36 in. and 2½ in. deep, inside; capacity, 50 lbs.; weight, 45 lbs. $10 00
" 2, " 20x36 " 2½ " " " 30 " " 29 " 8 00
" 3, " 17x27 " 2½ " " " 20 " " 25 " 7 00
" 4, " 14x23 " 2½ " " " 10 " " 20 " 6 00



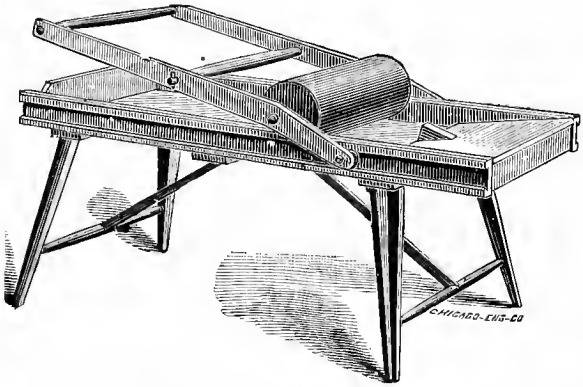
Three pounds can be worked in any of the above machines, as well as a larger quantity.

We also manufacture larger sizes, specially designed for mixing, re-working and coloring, or for creamery use.

No. 0, size 23x37 in. and 3 in. deep, inside; capacity, 75 lbs.; weight, 60 lbs. . $12 00
No. 00, size 23x56 in. and 3 in. deep, inside; capacity 112 lbs.; weight, 80 lbs. . 15 00
No. 000, size 23x72 in. and 3 in. deep, inside; capacity 150 lbs.; weight, 100 lbs. . 18 00

When desired, we can send legs along with any size machine for $4.00 extra, which can be set up after arrival at destination.

BUTTER WORKERS.



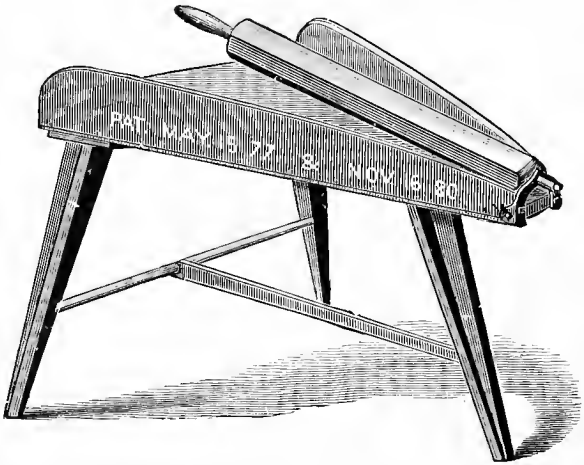
IMPROVED EUREKA.

The Eureka worker is so constructed that all portions of the butter are equally worked with an even pressure. The brine and buttermilk are drawn off, the butter rolled out into a thin sheet, a portion of salt sifted on, and then by a quick backward motion of the roller the butter is turned bottom side up or folded in the tray, rolled out again, more salt sifted on, again turned and rolled. This worker has folding legs, same as on the Lever worker.

SIZES AND PRICES.

No. 1,	family	size,	will	work	25	pounds,	weight,	70	pounds	.....	$10 00
" 2,	dairy	"	"	"	50	"	"	80	"	.....	12 00
" 3,	factory	"	"	"	75	"	"	100	"	.....	15 00
" 4.	"	"	"	"	100	"	"	130	"	.....	20 00

LEVER.



This cut represents the Lever worker with our patent folding legs, which can be taken down and set up again in a moment's time by anyone; and when set up it stands firm and substantial. It has no equal, because it has more good points and fewer poor ones than any other, and is, therefore, the most deservedly popular butter worker in the country; and what is more to the purpose, it has been purchased and practically tested from day to day by hundreds of dairymen in all parts of the country, and is by them universally commended. With it the butter can be re-worked and freed from the last vestige of buttermilk, and the grain of the butter preserved intact.

SIZES AND PRICES.

No. 0,	20	inches	wide,	will	work	15	pounds,	weight	30	pounds	..... $ 5 00
" 1,	30	"	"	"	"	25	"	"	40	"	..... 6 50
" 2,	40	"	"	"	"	35	"	"	60	"	..... 7 50
" 3,	factory	size,		"		60	"	"	80	"	..... 12 00

THE "IDEAL" BOILER AND STEAM FEED COOKER

The long felt need of a good, reliable farm boiler for cooking feed, heating water, etc., is supplied by The IDEAL BOILERS, which are made from boiler iron, and have regular lap-welded boiler flues, making them durable, rigid and strong in all their parts, and will last, with ordinary care, a life-time. They are well riveted and corked, and while we test these boilers at 100 lbs. hydraulic pressure, they are only intended for use when low pressure is required.

The IDEAL BOILERS are claimed to be the best in the market for the following reasons: They are made of heavier and better material, and as they have a number of boiler flues passing directly through the water, thereby distributing the heat, they require less fuel than other boilers, and the boiler is provided with grates, which adapts them to the burning of all kinds of fuel, such as coal, wood, corn-cobs, etc. Any careful buyer can readily see that the Ideal boilers, or feed cookers, manufactured from the quality and weight of the material used in these boilers, are capable of running and giving good service for an unlimited number of years.

The IDEAL STEAM BOILER will cook or steam any kind of food placed in a barrel or vat, with but little care and without danger of burning, thus overcoming the objections to a kettle or cauldron. It will steam *dry corn stalks and straw* so that they will become soft and palatable, and *cook potatoes* so as to render them digestible and valuable for food. It will also enable a farmer to *save one-third to one-half of his corn* and other feed, and at the same time make his *stock thrive better.* It will *save labor in feeding*, rather than increase it, as stock fatten much faster when their feed is cooked.

SIZES AND PRICES.

Size No.	Diameter of Shell.	Height of Shell.	No. of 2-inch Flues.	Length of Boiler Over All.	Shipping Weight.	Price.
1	19 inches	40 inches	9	54 inches	325 pounds	.....
2	19 "	44 "	13	58 "	370 "	.....

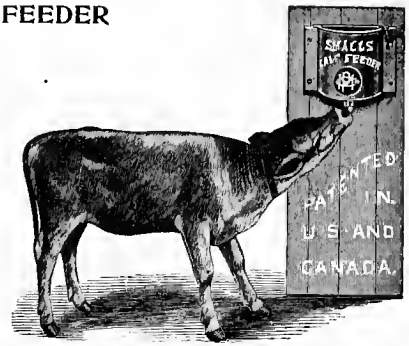
Steam gauge and glass water gauge complete, fitted, extra.....

The trimmings include two gauge cocks, blow-off cock, pump for supplying the boiler with water, safety valve, 2 feet 6 inch suction hose, 3 feet steam pipe, with valve to convey steam to barrel or vat, for cooking feed or boiling water.

Please Write for Greatly Reduced Prices on These Boilers

CALF FEEDERS AND WEANERS

SMALL'S CALF FEEDER



This new article of manufacture was designed and has been perfected by the inventor for feeding milk to young calves in a natural way before they are old enough to eat and drink otherwise, and is to the calf what the nursing bottle is to the babe, a substitute for nature.

PRICE

By express.....each, $2 50
By mail..... " 3 10
Nipples, 25 cents each, or five for $1 00

BROWN'S CALF FEEDER

Cheap—Simple—Perfect. Can be attached to any pail, trough or bucket. A natural substitute, to which the calf adapts itself immediately.

PRICE

Single.....$ 25
Per dozen 2 50

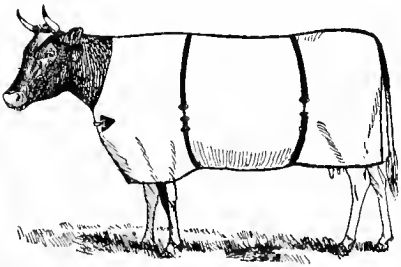
RICE'S PATENT CALF WEANER

For preventing calves and cows sucking themselves or each other. It is no hindrance to either eating or drinking, does the animal no injury; has been thoroughly tested, is used and endorsed by the best stock raisers.

PRICE

No. 1. For calves till one year old,	$0 50;	per doz.,	$5 00
No. 2. For one or two years old,	75;	"	8 00
No. 3. For full grown animals,	1 00;	"	10 00

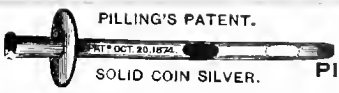
"STAY ON" CATTLE COVERS



We have had numerous calls for Cattle Covers, for protecting cattle from flies and other insects, and have added them to our line. We have them in two styles —Burlaps and Canvas. They are strong, well made, and **Stay On.**

PRICES

Burlaps.....each, $0 75
" .....per doz., 7 50
Canvas .....each, 90
" .....per doz , 9 00



MISCELLANEOUS

PILLING'S COIN SILVER MILKING TUBES

For sore and obstructed teats and hard milking cows. These tubes will be sent postage paid to any part of the United States or Canada on receipt of price.

Price, 1¾-in., each.....50c | Set of four tubes, (1¾-in., each)....$2 00

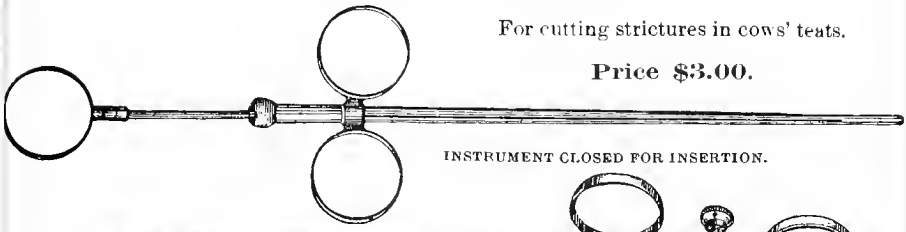
OTHER SIZES AND PRICES

2¼-in., each	$0 65	3¼-in., each	$0 85
2¾ " "	80	3¾ " "	95
4¼-in., each	$1 07		

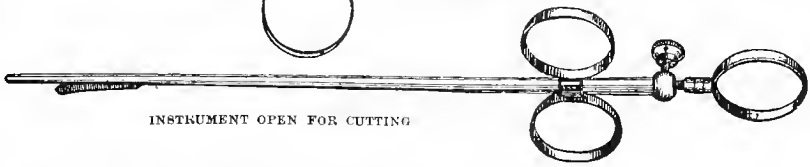
STRICTURE INSTRUMENTS.

For cutting strictures in cows' teats.

Price $3.00.

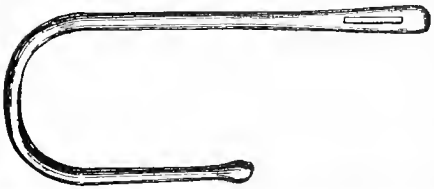


INSTRUMENT CLOSED FOR INSERTION.



INSTRUMENT OPEN FOR CUTTING

LEAD PROBE OR SOUND.



DIRECTIONS FOR USING LEAD PROBES.

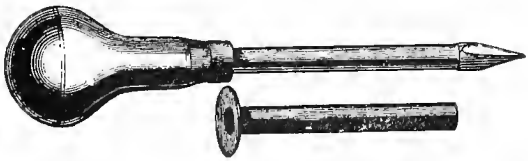
The probes are to be oiled or smeared with fluid extract belladona, and inserted after each milking and worn between milkings. When teats are sore, milking tubes should be used. By the use of the probe the milk duct is kept from growing up. They may be used a few days or as many as the case demands. They should always be used after operations with the teat bistoury to prevent the parts from healing together as before. Made in three sizes, small, medium and large. Postpaid, 25c each.

INSTRUMENT FOR OPENING COWS' TEATS.

We wish to call careful attention to the above instrument for opening obstructed cows' teats. It is made of best materials and with same care and skill used in the manufacture of instruments for the medical profession. We send it securely packed in a neat box, with full directions. **Price 75 cents.**

BULL PUNCHES OR TROCARS.

WITH SILVER PLATED SHEATHS.



For ringing bulls or punching bloated cattle.

No. 1 ..... each. $1 00

One-half dozen in a box.

CODES

FOR the benefit of our customers who frequently find themselves in need of goods and are unable to stand the delay necessary in ordering same by mail, we have compiled a telegraphic code, by the use of which they can wire us an order of considerable size without great expense. In using this code you will observe the necessity of spelling each word with great care, as the misplacement of a single letter might cause a serious misunderstanding. By using the different number codes in connection with the general codes you will see that it will be possible to order most any quantity of goods within reasonable telegraphic limits.

We give you below a sample message, which will illustrate how the code is to be used.

Acrostic Dale Dagger Banter Debatable Deaden Ball Debatable Belong Deaden

Translated:

Ship by first freight 10 5-gal. Dubuque Pattern Milk Cans; 200 60-lb. Improved Elgin Style White Ash Tubs; 200 Parchment Linings and Circles complete for 60-lb. Tubs.

TELEGRAPH CODE

Abandon .....Answer by mail
Abase .....Referring to our letter of
Abash.....Referring to your letter of
Abate... .....We will write fully today
Abdicate.....We have no letter from you
Abduct.....Will write you fully in a day or so
Abel.... .....Write, giving full particulars
Abet.... .....Answer by telegraph, day message
Abhor..... Answer by telegraph, night message
Abide.....Referring to our telegram of
Ability... ..... .Referring to your telegram of
Abject.....Telegraph immediately
Abjure.....Telegraph reply as soon as possible
Ablaze.....We have no telegram from you
Ablution.....Why do you not telegraph
Ably..... .....Shall we
Abnormal.....Will you
Aboard.....Will you accept
Abode..... ...Wire at once, accepted or not
Abolish..Will greatly accommodate us if you will
Abolition..... .....According to contract
Abominable .....Not according to coutract
Aboriginal.....To which add the cost of
Abortion.....In addition to
Abound..... .....How did you address
About..... .....Was addressed to
Above..... .....Please note an advauce of
Abrade.....Would you advise
Abreast..... Would advise you to
Abridge....Unless otherwise advised will assume that
Abroad.....Will you agree to
Abrogate.....Will agree to
Abrupt.....Must have answer by
Abscess.....Will be in
Abscond..... ..Will be here
Absence.....Cash on delivery
Absent..... .....Cash in 30 days
Absolute.....Will not allow any commission
Absolution.....Commission will be allowed
Absolve..Financial standing being unknown, we will send goods C. O. D., unless otherwise instructed
Absorb..Kindly send references as to your financial standing or shall we ship by freight with draft attached to bill of lading
Abstain.... ....Will you agree to conditions
Abstemious..... .....Contract awarded
Abstinence.....Contract will be awarded
Abstract.....Will you extend credit
Absurd.....Have you decided
Abundance .....Have not decided
Abundant..... .Have decided
Abuse ....Will guarantee delivery by
Abusive....Cannot guarantee delivery before the
Abutment ....What is the capacity
Abyss .....Will do the best we possibly can
Academic.....Shall we do so
Academy.....Do so
Acanthus.....Can do nothing until
Accede.....What have you done about
Accelerate..Will deposit sight draft on you today unless advised to the coutrary for——dollars
Accent.....Please accept our draft for——dollars
Accept.....Send duplicate copy of invoice
Acceptable....Have examined very carefully and find
Acceptance.. ....Expenses to be paid by
Access.....Do not fail to
Accessible.....Have figured as close as possible
Accession.....Freight must be prepaid
Accident...Freight rate per hundred pounds to destination is
Acclaim.What is freight rate per hundred pounds
Acclimate.....Guarantee the account
Acclivity.....Hold subject to your order
Accommodate..... Does not include
Accompanist..... ....Must be included
Accompany.....Will keep you fully informed
Accomplice.....Insist upon
Accomplish .....Await instructions
Accord.....Letter in transit with full particulars
Accordance.... Shall we deliver goods on verbal order of your Mr.——
According... Advisable for you to place order at once, prices tending to advance
Accordion..... .....Our Mr.——will call on you
Accost.....Get our instructions at——
Account.....Go to——and wait for instructions
Accrue.....Our board meets——have your Mr.——there

ORDERS.

Acoustic .....Add to our order of
Acquaint. .....Cancel our order of
Acquiesce..... .Change our order of
Acquire....Hurry forward goods on our order of
Acquirement....Have you shipped goods on our order? If not when will you ship
Acquisition.....Enter order if you can ship in
Acquit..... Hold for instruction our order of
Acquittal.....If you cannot ship in time named advise by telegraph.
Acre.....Instructions by mail
Acrimony.....Prepay freight
Acrobat...Shipping instructions will be sent you
Across.....Ship immediately
Acrostic.....Ship as soon as possible
Act..... ..... Ship by express
Action. .....Ship by fast freight
Active.....Ship quickest route
Acton..... ....Ship cheapest route
Actress.Send tracer immediately for shipment of
Actual.....Wait receipt of letter before proceeding with order
Actually..... Change order for
Actuate.....Send C. O. D. by express

Telegraph Code—*Continued*

Orders—*Continued*

Acute.....What quantity can you ship per day
Adage.....Do not delay
Adapt.....Duplicate our order of
Add.....Can you furnish
Adder.....Hold subject to your order
Addict.....Hold until further orders
Addition.....Send us immediately
Addle.....This is very important
Address.....How soon can you ship car of
Adept.....At what price could you furnish
Adequate....Quote us by telegraph best price on
Adhere.....Quote us by next mail best price on
Adherent.....Can you ship immediately
Adhesive.....Can you ship in
Adieu.....Have you in stock
Adjacent.....Have you in stock, if not how soon can ship
Adjective.....How soon can you ship
Adjoin.. How soon can you make first shipment and how fast remainder
Adjourn.....What substitution can you make
Adjunct.....When can you ship

ANSWERS

Again.....Please specify quantities
Against.....Unable to give better price
Agate.....We quote
Age.....We quote for immediate acceptance
Aged.....We quote in reply to your inquiry of
Agency.....We quote shipment from stock
Agent.....We quote shipment in
Aggrandize.....We cannot accept at the price
Aggravate.....We will accept your order
Aggrieve.....We do not handle the article
Aghast.....Can ship at once from stock if advised immediately

Answers—*Continued*

Agile.....Can ship at once on receipt of order
Agitate.....Can ship in
Agitation.....Can begin shipping at once and complete in
Agnostic..Can ship within one week of receipt of order if advised at once
Agoging...Can ship within two weeks of receipt of order if advised at once
Agony.....Have none in stock
Agree.....First shipment will be made
Agreed.....Have entered order and will ship
Agreeable.....Have started tracer as requested
Agreement.....Too late to cancel order
Aground.....Unable to ship goods on time promised
Ague.....Unable to ship until
Ahead.....We ship you today
Aid.....We expect to ship
Ail.....We will complete your order
Ailment.....We will ship
Aim.....We have shipped
Aimless.....We have completed your order and shipped same
Air.....We have entered order
Aisle.....Telegraph shipping instructions for your order of——
Akin.....Can deliver part of your order at once
Alacrity..Shall we ship portion or hold until we can make one complete shipment
Alarm.....Do not understand your order, send duplicate with full detail
Alas.....Send us official order confirming your order telegram
Albino.....Our quotations are F. O. B.
Album.....Is best price we can make
Alcohol..We no longer handle——can substitute

SUPPLY CODE

AUSTRALIAN BOXES

Babble.....Spruce Australian boxes, K. D.
Babe.....Poplar Australian boxes, K. D.
Bachelor....Cottonwood Australian boxes, K. D.
Back.....Spruce Australian boxes, nailed
Backbite.....Poplar Australian boxes, nailed
Backslide..Cottonwood Australian boxes, nailed

BUTTER BOXES

Bail.....——lb. Bradley butter boxes
Bailable.....——lb. paper butter boxes
Bailiff.....——lb. round spruce butter boxes
Bait.....——lb. improved butter shipping boxes
Baize.....——lb. bail butter boxes
Bake.....Ideal manilla print butter packages

BUTTER TUBS

Ball..——lb. improved Elgin style white ash tubs
Ballad.....——lb. spruce butter tubs
Ballast.....——lb. Stearns' style spruce tubs

BUTTER COLOR

Balm.....Chr. Hansen's Danish butter color
Balmoral.....Hansen's Columbian butter color
Balmy.....Wells & Richardson butter color

BELTING

Bamboo.....Rubber belting, 3-ply
Banana.....Rubber belting, 4-ply
Band.....Leather belting
Bandage.....Gandy belting, 4-ply
Bandana.....Gandy belting, 6-ply
Bandit.....Leviathan belting
Bane.....Carlson, De Laval and Alpha belts

CANS

Bauquet.....——Gal. Union milk cans
Bantam.....——Gal. Hodo milk cans
Banter.....——Gal. Dubuque pattern milk cans
Bar.....——Gal. Elgin pattern milk cans
Barbarian..—Gal. Roe Union cream carrying cans

Cans—*Continued*

Barbecue.....——Gal. Haney's jacketed cream carrying cans
Barber.....——Gal. Cherry's jacketed cream carrying cans
Barely.....Empire State milk cans

CLOTH AND PARCHMENT CIRCLES, LININGS, ETC.

CLOTH	CIRCLES	PARCHMENT
Baron	8½	Bean
Barouche	9	Bear
Barque	9½	Beard
Barrack	10	Bearer
Barrel	10½	Bearing
Barren	11	Beast
Barricade	11½	Beat
Barrister	12	Beating
Barrow	12½	Beau
Barter	13	Beauteous
Base	13½	Beautiful
Basement	14	Beautify
Bashful	14½	Beauty
Basin	15	Beaver
Basis	15½	Beckon

CLOTH	SQUARES	PARCHMENT
Basque	6x 6	Bedaub
Bass	7x 7	Bedding
Baste	8x 8	Bedside
Bat	8x 9	Beech
Bate	9x 9	Beef
Bath	10x10	Beefsteak
Baton	8x11	Been
Battalion	9x12	Beetle
Batter	12x12	Befogged
Battery	10x15	Before
Battle	12x15	Begin

Bellow.....Parchment linings for——lb. tubs
Belong..Parchment linings and circles complete for——lb. tubs
Beloved.....Australian box linings

Supply Code—*Continued*

CHEESE BANDAGE

Below.....—— in. Seamless cheese bandage
Bench.....—— in. Excelsior cheese bandage
Beneath.....—— in. Readymade cheese bandage

CHEESE COLOR

Beut.....Hausen's Domestic cheese color
Benzine..... Royal Swiss cheese color

CHEESE GREASE

Besiege.....Johnsons' fly-proof cheese grease
Betray....Cheese boxes (use number code to give sizes)
Beverage.....Cheese box material for——boxes (use number code to give sizes)

COOPERAGE STOCK

STAVES

Bevy..... .No. 1 staves, 30 in. } Give kind of wood
Bewail.....No. 1 staves, 28½ in. } Give kind of wood
Beware.....No. 2 staves, 30 in. } Give kind of wood
Bewilder...No. 2 staves, 28½ in. } Give kind of wood

HEADING

Bewitch..... .....No. 1, 17⅛ in., hard
Bey.....No. 1, 17⅛ in., soft
Beyond..... .....No. 2, 17⅛ in., hard
Bias.....No. 2, 17⅛ in., soft
Bicker.....No. 1, 19⅛ in., hard
Bicycle..... ...No. 1, 19⅛ in., soft
Bid.....No. 2, 19⅛ in., hard
Bide.....No. 2, 19⅛ in., soft
Bier..... .....No. 2, 18½ in., soft

CURD KNIVES

Binding.....Horizontal curd knife
Biology..... .....Perpendicular curd knife

CLEANSING POWDER

Biped ... .Fairchilds cleansing powder

HOSE

Blue..... .....3-ply conductor hose
Bluff..... ....4 ply conductor hose
Blunder..... ....Suction hose
Blunt.....Steam hose
Blur.....Wirebound hose

MILK JARS

Bodice.....Half pint tin top milk jars
Bodied.....1 pint tin top milk jars
Bodily..... .....1 quart tin top milk jars
Bogus..... .....Half pint Ideal milk jars
Boil.....1 pint Ideal milk jars
Boisterous.....1 quart Ideal milk jars

PERFECTION GATES

Bonfire.....1¼-inch inside thread
Bonnet.....1¼-inch outside thread
Bonny.....1½-inch inside thread
Bonus.....1½-inch outside thread
Bony.....2-inch inside thread
Booby.....2-inch outside thread
Book.....3-inch weigh can gate

RENNET EXTRACTS AND TABLETS

Boom ....Hansen's rennet extract
Boost.....Hansen's rennet tablets

SALT

Boudoir.....Genesee F. F. salt
Bough.....Diamond crystal salt
Bought.....Ashton F. F. salt
Bounce.....Cadillac salt

SCALE BOARDS

Borax.....——inch Scale boards (use number code for size)

TUB FASTENERS

Bovine..... .Common tub fasteners
Bower..... .....Riveted nail fasteners
Bowled.....Ideal fasteners
Bowl.....Star tub fasteners

TEST BOTTLES

Brandy..... ...Babcock test bottles
Brass..... .....Babcock cream test bottles
Brave.....Russian test bottles
Bravado.....Ohlsson test bottles

THERMOMETERS

Bravery.....Common floating thermometers
Brawl.....Nickel-plated flange thermometers
Brawn.....New floating thermometers

VALVES

Bray.....—— in. Jenkins Brass globe valves
Brazen.....—— in. Jenkins Brass check valves
Breach.....—— in. Jenkins Brass angle valves
Bread..... .....—— in. pop safety valve
Break.....—— in. ball safety valve
Breakage.... .—— in. common Brass globe valve
Breast.....—— in. common Brass check valve

MACHINERY CODE

BUTTER WORKERS

Cabal.....Mason worker with plain table
Cabbage....Mason worker with plain table and galvanized castings
Cabin..... .....Mason worker with rim guard
Cabinet....Mason worker with rim guard and galvanized castings
Cable.....Fargo upright worker
Cackle.....Alpha butter worker
Cactus..... .....National " "

BABCOCK TESTERS

Calabash.....Ideal 20 bottle tester
Calamus ..... " 24 " "
Calamitous..... " 32 " "
Calamity ..... " 40 " "
Calcimine . 20th Century 8 bottle tester, hand
Calcine..... " 10 " " "
Calcium..... " 12 " " "
Calculate .... " 24 " " "

BUTTER PRINTERS

Callous.....Lafayette butter printer
Callow..... " " " with table
Calm.....Lusted " "
Calmness..... American
Calomel.....Reid's automatic iron clad

BOILERS

See code words in connection with boiler lists

CHURNS

Canister.....Pine churn
Canker.....Ash churn
Cannibal.....Cedar churn
Cannon.....No. —— Victor churn and worker
Canoe .....No. —— Disbrow churn and worker
Canon.....Simplex churn and worker

CHEESE PRESSES

Caprice .....Fraser's gang press
Capricious....Fraser's combination gang press
Capsize.....Steel gang press
Capsule..Patent Sprague automatic adjustable steel gang press
Captain.....Standing cheese press

CHEESE BOX MACHINES

Captive..... Roe pattern cheese box machine
Captor.....Harris pattern cheese box machine

CREAM COOLERS

Capture No.—Star cream cooler, elevated water
Carmel...No.——Star cream cooler with syphon
Caravan.....Ideal cream cooler

CREAM RIPENER

Caraway.....——Gal. Farrington

CURD MILLS

Cargo.....Pohl self-salting curd mill
Carman.....Kasper curd mill
Carnage.....Harris curd cutter
Carnal.....Gosselin curd mill

ENGINES

See code words in connection with engine lists

FIRE EXTINGUISHERS

Cashier.....Perfection fire extinguisher

HANGERS

Catchup.....$1\frac{7}{16}$x12 in. hangers
Category.....$1\frac{11}{16}$x12 in. "
Cater.....$1\frac{13}{16}$x12 in. "

HEATERS

Caterer..... .....Climax milk heater
Cathartic.....Ideal milk heater
Catholic..... .....20th Century milk heaters

PASTEURIZERS

Catholic.....—gal. Potts' pasteurizer

PIPE TOOLS

Ceiling.....Stock and dies, ½ to 2 inches
Celebrate..... " " " ½ to 1½ "
Celerity.....Pipe vise
Celery.....Brown's adjustable tongs, ⅜ to 1 inch
Celestial. . " " " ½ to 1¼ "
Celibacy... " " " 1 to 2 "
Cell.....No 1 Barnes' pipe cutter
Celluloid ....No. 2 " " "
Cement.....No. 1 Stanwood pipe cutter
Cemetery.....No. 2 " " "
Cense..... .No. 1 Saunders' " "
Censor.....No. 2 " " "
Census..... ....No. 1 Alligator wrench
Centennial ..... .No. 2 " "
Centiped.....No. 3 " "
Center.....12-inch Combination "
Central.....15 " " "
Century.....10 " Stilson "
Centurion .....14 " " "
Ceremony.....10 " Trimo "
Certain.....14 " " "
Certificate.....No. 1 Parker's vise
Certify.....No. 2 " "
Cession.....No. 3 " "

PULLEYS

Channel.....Wood split pulley
Chant .....Iron "
(Use number codes to give sizes)

PUMPS

Charity.....No. 0 Dean upright pump
Charm... .....No. 0 " horizontal "
Charnel,.....B Marsh "
Chart.....B B " "
Charter.....4x 6 " "
Chase.....4x 8 " "
Chasm .....6x12 " "
Chastise.....Crank suction and force pumps
Chattel...Crank suction and force pump for deep well
Cheap ....No. 1 rotary pump
Cheat.....No. 1 Pitcher "
Chest.....No. 2 " "

REFRIGERATING MACHINES

Chestnut.....Stallman —— ton compressor

SCALES

Chickory.....——lb. Roberts' salting scale
Chide.....——lb. Fairbanks' double beam "
Chief.....——lb. " five " "
Chilblain....——lb. Champion double " "
Childish.....——lb. Howe five " "
Chimb.....——lb. " double " "
Chime.....——lb. Jones' " " "
Chimney .....——lb. " five " "
China.....Troemner cream scale

Machinery Code—*Continued*

SEPARATORS

Chisel.....Reid separator
Chlorate.....Spriuger "
Chocolate.....Russian "
Choice.....United States "
Choir.....Alpha Acme belt "
Choke..... " " turbine "
Cholera..... " No. 1 belt "
Choral..... " No. 1 turbine "
Chord..... " No. 2 belt "
Chorister..... " No. 2 turbine "
Chorus.....De Laval Standard "
Chowder ..... " turbine "
Chrome..Humming bird No. 0 De Laval "
Chronic..Improved baby, No. —— " "
Chrysalis..Improved dairy turbine " "

SKIMMED MILK WEIGHER

Cigar.. .....Ideal skimmed milk weigher
Cinchona..... Curtis " " "

SKIMMED MILK STERILIZER

Cinder.....Jensen's skimmed milk sterilizer
Cipher.....Walker's skimmed milk sterilizer
Circle.....Tolcotts " " "

TANKS

Citadel..No. —— Ideal galvanized iron steel tanks

TRUCKS

Clamber.....Platform truck
Clamor.....Butter and cheese "
Clamp .....New York butter "
Claret.....Chicago Daisy "
Clarify.. .....Bag "

VATS

Clerk.....Wood jacket tempering vat
Clever.....Galvanized " "
Climate.....——gal. cream vat, with ice sides
Climax..... " " " " " ends
Clipper.——gal. cream vat, with ice sides and ends
Clique.....——gal. twin vat, with ice ends
Cloister..... " " " " " sides
Closet..——gal. twin vat, with ice sides and ends
Clothier.....——gal. milk vat
Cloud.....Sanitary Ideal —— gal. milk vat

WEIGH CANS

Cobweb.....—— gal. weigh can

WASH SINKS

Cock.....Curtis wash sink
Cocoa.....Stationary wash sink
Coddle.....Portable wash sink
Codger.....Round bottom wash sink

NUMBER CODE

Dabble	1
Dabster	2
Dado	3
Daft	4
Dagger	5
Dahlia	6
Daily	7
Daintily	8
Daisy	9
Dale	10
Damage	11
Damask	12
Damp	13
Damsel	14
Dance	15
Dandelion	16
Dandy	17
Danger	18
Dangerous	19
Dangle	20
Dark	25
Darken	30
Daunt	35
Dawn	36
Daylight	40
Daze	45
Dazzle	50
Deaden	60
Deadly	70
Deafen	75
Dearth	100
Debar	125
Debark	150
Debase	175
Debatable	200
Debate	250
Debauch	300
Debility	350
Debit	400
Debris	500
Debonair	600
Debut	700
Debutant	800
Decade	900
Decamp	1000

POUNDS

Decree	1 lb.
Decrepit	2 "
Decry	3 "
Dedicate	4 "
Deduce	5 "
Deduct	6 "
Deduction	7 "
Deface	8 "
Defalcate	9 "
Defame	10 "
Default	20 "
Defaulter	25 "
Defeat	30 "
Defect	35 "
Defective	40 "
Defence	45 "
Defend	50 "
Defendant	55 "
Defensive	60 "
Defer	75 "
Deference	100 "
Defiance	200 "
Defiant	300 "
Deficient	400 "
Deficit	500 "
Defied	600 "
Defile	700 "
Defilement	800 "
Define	900 "
Definite	1000 "

GROSS

Delicacy	1 gross
Delicate	2 "
Delicious	3 "
Delight	4 "
Delighted	5 "
Delineate	6 "
Delinquent	7 "
Delirious	8 "
Delirium	9 "
Deliver	10 "
Delta	15 "

Number Code—*Continued*

Gross—*Continued.*

Delude	20 gross
Delusion	25 "
Delusive	30 "
Delve	35 "
Demand	40 "
Demeau	45 "
Demeanor	50 "

YARDS

Desk	5 yds.
Desolate	10 "
Desolation	15 "
Despair	20 "
Desperado	25 "
Desperate	30 "
Despise	35 "
Despite	40 "
Despoil	45 "
Despond	50 "
Despot	55 "
Despotic	60 "
Despotism	65 "
Dessert	70 "
Destine	75 "
Destiny	100 "
Destitute	150 "
Destroy	200 "
Desultory	250 "
Detach	300 "
Detail	350 "
Detain	400 "
Detect	450 "
Detection	500 "

SIZES FOR PIPE, HOSE, SHAFTING, PULLEYS, ETC.

Devoid	⅛-inch
Devoir	¼ "
Devolve	⅜ "
Devote	½ "
Devotee	⅝ "
Devotion	¾ "
Devout	1 "
Dewy	1¼ "
Dexterity	1½ "
Dexterous	1 3/16 "

FRACTIONS

Disown	⅛
Disparage	¼
Disparity	⅜
Dispatch	½
Dispel	⅝
Displace	¾
Dispose	⅞

DISCOUNTS

Each	5 per cent
Eager	10 "
Eagle	15 "
Earl	20 "
Earn	25 "

SIZES FOR PIPE, HOSE, SHAFTING, PULLEYS, ETC.—*Continued*

Diabetes	1 7/16 inch
Diabolical	1 11/16 "
Diadem	1 15/16 "
Diagnosis	2 "
Diagonal	2½ "
Diagram	3 "

WIDTH OF BELTING, ETC.

Difference	1 inch
Difficult	1½ "
Diffidence	2 "
Diffuse	2½ "
Digest	3 "
Digestible	3½ "
Digestion	4 "
Dignity	4½ "
Digress	5 "
Digression	5½ "
Dilapidate	6 "
Dilate	6½ "
Dilatory	7 "
Dilemma	8 "
Diligence	10 "

GALLONS

Discuss	1 gal.
Disdain	2 "
Disease	3 "
Disfavor	4 "
Disfigure	5 "
Disgorge	8 "
Disgrace	10 "
Disguise	20 "
Disgust	25 "
Dishearten	50 "
Dishonest	100 "
Dishonor	200 "
Disincline	250 "
Disinfect	300 "
Disinherit	350 "
Disinter	400 "
Disdain	500 "
Dislike	600 "

DISCOUNTS—*Continued.*

Earnest	30 per cent.
Earth	33⅓ "
Ease	35 "
Easel	37½ "
East	40 "
Easier	45 "
Eatable	50 "
Eaves	55 "
Ebonize	60 "
Ebony	65 "
Eccentric	70 "
Echo	75 "
Eclat	80 "
Eclipse	85 "
Economic	90 "
Economy	95 "

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DISCOUNT SHEET

FOR LARGE

1902 and 1903 CATALOGUE

MARCH 1, 1902

We quote herewith our regular discounts and net prices which will apply except for large orders, when we may in some instances be able to quote slightly lower prices.

Articles not enumerated are net, unless otherwise agreed upon.

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE

CREAMERY PACKAGE MFG. CO.

WHERE PRICES ARE NOT GIVEN IN CATALOGUE, SEE MONTHLY PRICE LIST FOR QUOTATIONS.
WRITE FOR PRICES ON GOODS MARKED SPECIAL.

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13	Economist Boilers	Special
18–19	Horizontal Tubular Steel Boilers	"
20–21	Plain Upright Steel Boilers	"
24–25	Victor Engines	"
26	Jewell Engines	"
27	Upright Engines	"
28–30	White Gas or Gasoline Engines	"
31	Smoke Stack	20
	Guy Wires	Net
	Fire Brick	"
	Stack Plates	"
32	Frost Improved Shaking and Dumping Grates	Special
45	Stillwell's Patent Heating Regulator—F. O. B. Factory	25
	Stillwell's Patent Heater with Oil Separator	40
	Wainwright's Water Tube Feed Water Heater	Special
47	Kelly's Condenser, Heater and Filter	15
	Acme Water Heater	20
48	Covered Crank, Suction and Force Pump	50
	Hand Boiler Filling Pumps	40
49	Solid Plunge Boiler Feed Pumps	40
	Steam Boiler Feed Pumps	Net
	Scotch Yoke Geared Boiler Feed Pumps	25
50	Force Pumps	70
	Brass Cylinders	70
	Iron Cylinders	70
	Pump Rods—Black	40
	Pump Rods—Galvanized	40
	Couplings for Pump Rods	50
52	Moore's Steam Pumps—Sizes B, BB	50

PAGE		PER CENT.
52	Moore's Pumps—Sizes B C	40
	Moore's Pumps—other sizes	30
53	Moore's Artesian or Deep Well	30
54	Marsh Steam or Gas Pressure	30
55	Marsh Steam Pumps—Sizes B, BB	50
	Marsh Steam Pumps—Size C	40
	Marsh Steam Pumps—Sizes D, E	30
56	Erwin Steam Ram	Net
57	Marsh Single Cylinder Steam Milk Pumps	40
	Marsh Double Cylinder Steam Milk Pumps	35
58	Ideal Rotary Pumps	50
	Ideal Rotary Pump Extras	Net
	Rotary Force Pumps—No. 1 ..... $7 00	"
	Rotary Force Pumps—other sizes	60
	Rotary Force Pump Extras	Net
59	Sanitary Milk Pump	35
	Sanitary Milk Pump Extras	Net
60	Belt Power Pumping Jacks	30
	Eccentric for same	Net
	Power Porcelain Lined Pitcher Pumps	30
	Hand Porcelain Lined Pitcher Pumps	60
61	Injectors—Metropolitan Automatic	60
	Penberthy	75
	U. S. Automatic	70
62	Leader	60
	Excelsior	60
	Ejectors—X L	70
	H D	60
63	Blakeslee Jet Pumps	70
	Water Heaters—Lee	60
	Penberthy	60
	McDaniels	20
64–68	Alpha De Laval Cream Separators	Net
69–79	Extras for Alpha Power Separators	"
78–79	Extras for Standard De Laval Power Separators	"
80	Extras for "Reid's" Improved Danish-Weston Separator	"
81	Extras for Jumbo Separators—Except Belts	"
82	Extras for Old Style Danish-Weston Separators	"
83	Separator Belts—De Laval and Sharples Rope...See Price Current	
	Wach's Rawhide D. W. Belts	"
	Light Double Leather Belts	"
	Endless Flat Rawhide Belts	"
	Perfection Flat Seine Cotton	"
84	Hexigon Pocket Levels	"
	Iron Levels and Plumbs	30
	Griffin's Hack Saw	10
	Acme Combined Pliers and Wire Cutters	40
	Solid Steel End-cutting Nippers	20
	Double Calipers	25
85	Milk Heaters—20th Century	Net
86	Ideal	"
	Larkey	"
	Climax	"
	Curtis	"
87	Curtis Elevating	"
88	Tempering Vats—Ideal Galvanized—two large sizes 20%, others	10
	Wood Jacketed	20
	Heater Vat Governors	Net
	Cream Cooler—Bair—Copper or Tin	"
	Star	20
	Ideal	20
89	Hoisting Crane Irons $5.50	Net
	Milk Can Hooks	20
	Patent "Sure Grip" Steel Tackle Blocks	30

PAGE		PER CENT.
90–91	Ideal Carrying System	Special
93	Ideal Skim Milk Weigher	10
94	Curtis Skim Milk Weigher	Net
95	Barber-Coleman Check Pumps	"
	Ideal Weigh Can Gate Opener $1.50	Net
96	Weigh Cans	20
97	Perfection Gates	40
	Molasses Gates	50
98	Sanitary Ideal Milk and Cream Vats	20
99–101	Vats	20
	Tin Linings for Vats	20
103	Skeleton Milk Vats	20
104	Cream Vat Covers	20
107	Farrington Cream Ripener	Net
108	Haugdahl Starter Can	"
	Walker's Skim Milk Sterilizers	"
109	Talcott's Improved Pasteurizer	25
110	Wash Sinks—Stationary	25
	Portable	20
111	Curtis Wash Sink	20
	Ideal Wash Sink	25
112	Tanks—Round	10
	Round Bottom Wash Sinks	20
113	Ideal Galvanized Steel Tanks	20
114	Strainers—Vat	25
115	Square Churn	Net
	Handy Churn	20
	Vermont Butter Milk	Net
116–121	Disbrow Churns	"
122–125	Victor Churns	"
126–127	Simplex Churns. Note sizes 6 and 9 transposed	"
128	Square Box Churns	15
129	Churn Covers and Rims	25
	Cover and Rims Extras	Net
	Churn Gudgeons	"
	T and L Iron Pulleys	50
	Iron Churn Hangers	20
130	Mason's Power Worker	25
131	Extras for Mason's Improved Power Butterworkers	Net
132	Alpha Drum Butterworker	15
133	National Drum Butterworker	15
134	Cream Carrying Cans—Valerius 20 gal., $6.50; 30 gal., $7.50	
	Ideal " 5.00; " 6.00	
	Refrigerator Tanks	15
135	Oil Test Churns—Curtis	20
	Driver's Cases	15
136	Oil Test Tubes—100 lots, $5.25; 200 lots, $5.00	
137	Wagon Covers	20
138–139	Ideal Turbine Babcock Milk Testers	25
140	Babcock Milk Testers—20th Century Noiseless Haud	10
	Ideal Hand	See Price Current
141	Extras for Babcock Milk Testers	Net
	Russian Babcock Testers	"
142	Babcock Waste Jar	20
	Babcock Bottle Rinser	10
	Babcock Bottle Drain Racks	Net
143	Babcock Test Bottle Bath	10
	Babcock Test Water Heater and Bottle Fillers—complete	Net
144	Babcock Glassware	See Price Current
	Babcock Test Bottle Racks	Net
145	Olson's B. & W. Double Bore Test Bottles	See Price Current
	Wagner's Double Bore Test Bottles	See Price Current
	Russian Pipettes	Net
	Wagner's "Up-to-date" Pipette	Net

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147	Improved Carboy Trunnion	25
	Improved Pitcher for handling acid	20
	Rubber Carboy Caps	Net
	Rubber Carboy Splash Preventer	20
148	Scoville Milk Sampler	25
149	Composition Test Bottle Racks	Net
	Tin Top Bottles for Composite Test	See Price Current
155	Triers	Net
158	Glassware	See Price Current
160	Boston Cold Storage Butter and Cheese Cutters	10
	Standard Butter Cutter	Net
161	Lusted Butter Printers	10
	Extras for Lusted Butter Printers	Net
162	American Butter Printer	20
163	Ideal Lever Butter Printers	15
	Extras for Ideal Butter Printers	Net
164	Eureka Butter Printers	"
	Extras for Eureka Butter Printers	"
	Reid's Automatic Iron-Clad Butter Printers	15
165	Butter Moulds—California	50
166	Reid's Family Moulds	10
174	Improved Butter Shipping Boxes	10
	Butter Stands	Net
187	Stencils, Eureka and Revolving	10
	Months and Dates	10
	Creamery Stencils	10
188	Brooms	15
194	Cheese Factory Vats	20
	Extra Linings for Cheese Factory Vats	20
195	Self-Heating Cheese Vats—Curtis Style	20
196	Curd Sinks	20
	Curd Sink Castors	Net
197	Curd Rakes	"
	Curd Racks	"
198	Kasper Rotary Curd Mills $17 00	"
199	Gosselin Curd Mills 17 00	"
	Harris Curd Cutter	15
200	Curd Knives	40
	Tinned Cheese Knives	10
	Pohl's Self-Salting Curd Mills. With Salter, $19.00	Net
	Without Salter, 17.00	"
	Schauble's Improved Power Curd Mills	10
	Elgin Curd Mills	10
	McPherson Curd Mills	20
203	Milk Cans	See Price Current
204	Milk Cans, Union, made up " "	
	Milk Cans, Hodo, made up " "	
206	Helmer's Patent Continuous Pressure Steel Gang Cheese Press	10
207	Patent Sprague Automatic Aujustable Steel Gang Cheese Press	10
	Sprague's Automatic Blocks	Net
	Continuous Pressure Blocks	"
208	New Style Fraser Steel Gang Cheese Press	25
	Combination Fraser Cheese Press	25
210	Cheese Press Hoops, Galvanized Iron	35
	Tinned, Fraser	30
	Tinned, Loose Bottom	20
	Fibrous Press Rings	10
211	Galvanized Steel Cheese Hoops, made to order only	15
	Followers, Fraser	Net
	Hardwood	"
	Funnels for filling Y. A. Hoops	"
212	Standing Presses	15
	Cheese Press Rods, Screws and Saddles	Net
215	Cheese Box Machines—Roe or Curtis	15

PAGE		PER CENT.
215	Cheese Box Machines—Harris	Net
216	Wisconsin Curd Test	15
224	Golden Star Steam Kettle, f. o. b. Factory	Special
	Golden Star Fire Kettle, take same list as steam kettle, f. o. b. Fcty.	"
	Swiss Cheese Utensils, etc.	Special
	Press Cloth Circles	Net
225	Scales, Howe and Fairbanks	40
226	Jones Dairyman's	50
	Cheese Factory	50
	Champion Standard Portable Platform	30
227	Ideal Creamery	50–5
	Folding Creamery	30
	Folding Family	20
228	All Styles	35
229	Chatillon Creamery	30
	" Even Balance	25
230	Fairbanks' Agate Butter Print	Net
	" Common Butter Trip	35
	Troemner Cream Scale	Net
	Roberts or Rensselaer Butter Salting	10
231	Spring Balance	15
	Milk	40
	Union, Howe or Fairbanks	35
	Common	40
	Little Detective	35
232	Trucks, Platform	50
	Butter or Cheese	55
	New York Butter, f. o. b. Factory	55
	Chicago "Daisy"	55
	Bag	50
	Skids	10
233	Cold Rolled Shafting	60
	Improved Compression Couplings	50
	Flanged Face Coupling	50
	Self-Oiling Ball and Socket Hangers	50
	Wood or Lag Screws	70
234	Self-Oiling Adjustable Ball and Socket Hangers	60
	Rigid Pillow Blocks	50
	Collars	50
235	Wood Split Pulleys	50
236	All-Wrought Steel Pulleys	50
237	Gandy Belting	60

We furnish the best grade of belt only and our prices are right.

238	Rubber Belt "Extra Standard"	60
	"Chicago," "Best Grade"	50
239	Leather Belting, "Extra Short Lap"	40
	"Chicago"	50
	Rawhide	40
	Round	40

When ordering Belting, always state grade, as we always send best goods unless otherwise specified.

241	Belt Punches, Patent	10
	Spring	25
	Revolving Spring	25
242	Rawhide Lace Leather	See Price Current
	Cut Rawhide	" " "
	Bristol Steel	45
	Kerr's Metallic	Net
243	Covel Hooks	30

PAGE		PER CENT.
243	Thatcher Patent Belt Fasteners	45
	Blake's Patent Studs	25
	Pliers and Awls	Net
	Jones Improved Pointed Belt Hooks	55

We furnish the best grade of Hose only and our prices are right.

244	Hose—Steam—"Standard"	50
	"Best Grade"	40
	Conducting—"Standard"	60
	"Best Grade"	50
	Hard Rubber Suction	55
	Insert Wire Suction	55
	Cotton Garden Rubber Lined	Special

When ordering Hose always state grade wanted, as we always send best grade unless otherwise specified.

245-246	Hose Fittings	50
248	Babbitt Ladles	Net
	Hansen's Improved Burning Brands	Net
249	Oil Cans—Engineers Sets	Net
	Steel	50
	Oil Cups—Powell Sight Feed	35
	Plain	50
250	Oil Cans, with pump	25
	Pumps for Oil Cans	20
251	Grease Cups—Moon Automatic	50
	Star	50
	Neverslip	50
252	Lubricator—Detroit Improved	80
	Swift	40
	Lubricator Glasses	25
253	Steam Engine Governors	35
	Flue Cleaners—"Engineers Favorite"	50
	Steam	30
254	Steel Brush	50
	Roller Flue Expanders	65
	Beading Tools	Net
	Calking Tools	Net
	Coal Scoops	Net
	Pokers	Net
255	Steam Whistles	60
	Chime Steam Whistle—No. 1 no Valve, No. 2 Upright Valve, No. 3 Side Valve	45
	Air Cocks	50
	Gauge Cocks—Common	50
	Ball Gauge Cocks	50
	Scotch Water Glasses	65
256	Reliance Safety Water Column	30
257	Combination Water and Steam Gauges	50
	Steam Gauges	60
	Water Gauges	60
	Rubber Washers for Water Gauges	20
258	Pipe	Regular Market Prices
	Cutting Pipe Threads	40
	Pipe Fittings	60
259	Steam and Water Cocks	50
	Three-Way-Cocks	50
	Square Head Cock Wrenches	40
	Flat " " "	40
	Expansion Pipe Hangers	50
	Cranes and Ring Hooks	50

PAGE		PER CENT.
259	Plates	50
	Beam Hooks	50
	Branch Tees	50
	Hook Plates	50
260	Globe and Angle Asbestos Disc Valves	45
	Swinging Check Valves	30
	Extras—Asbestos Discs and Holders	Net
	Lunkenheimer's Handy Gate Valves	50
	Vulcanized Asbestos Packed Iron Cocks	20
	Square Head Cock Wrenches	40
261	Jenkins' Disc, Globe, Check and Angle Valves	45
	Jenkins' Discs	Net
	Pop Safety Valves	75
	Ball Safety Valves	50
	Common Brass Globes, Check and Angle Valves	50
262	Pipe Tongs—Brown's Adjustable	45
	Common	50
	Pipe Wrenches—B. & C.	20
	Stillson' Patent	45
	Trimo	45
263	Pipe Cutters—Barnes	50
	Stanwood	30
	Saunders	35
	Wrenches—Coe's Monkey	40
	Alligator	40
264	Diamond Vise	Net
	Reed's Gas Pliers	40
265	Pipe Taps and Reamers	60
	Pipe Vises—Enterprise Improved	30
	Malleable	60
	Combination	40
266	Die Stock—Gas Pipe	60
	Combination Pipe Tools Sets	50
267	Butter Makers Tool Chests	20
268	Radiators—Cast Iron	35
	Wrought Iron, per tube	30 cents, Net
	Bracket Coil	Special
	Branch Wall	"
269	Ice Plows	5
270	Ice Saws	20
271–273	Other Ice Tools	5
275	Ideal Asbestos Sectional Moulded Pipe Coverings	40
	Ideal Asbestos Sectional Moulded Pipe Fitting Coverings	40
276	Roofing	Special
277	Safes—Includes Lettering	25
278	Desks	25
	Copy Presses	25
	Chairs	10
	Box Files	35
	Letter Files	35
282	Blowers—Power Style	Net
	Hand Style	Net
285	Potts Pasteurizing Apparatus	Net
299	Tread Powers—1 H. P.	15
	Other sizes	25
	Baby, Jr.	25
301	Dog Powers—New Steel Frames	25
	Enterprise	Net
	Strainers—More's	25
	Lakin, No. 1	20
302	Elgin Strainers	Net
303	Pails—Iron Clad Tin	20
	Re-tinned, Seamless flange	Net
	Ideal Milk	10

PAGE		PER CENT.
303	Pails—Perfect	10
323	Tanks for deep setting cans	10
	Common sense setters	Net
324	Cooley Creamers	20
	Cooley Cans	Net
325	Star Milk Aerators and Coolers	Net
326	Champion Milk Coolers	20
327	Self-heating Dairy Cheese Vats	20
	Small Cream and Cheese Vats	20
328	Family Cheese Making Apparatus	10
329	Victor Dairy Combined Churn	25
330	Baby " " "	25
331	Dairy Box Churns—Rectangular	50
	Square, 4, 5, 6	25
	Other Sizes	50
	Dairy Barrel Churns—Acme or Ideal	60
333	Butter Trays—Richardi	25
	Covered	15
	Maple Butter Bowls	15
335	Dairy Butter Workers—Mason	10
	Reid	25
336	Improved Eureka	25
	Lever	25
337	Ideal Boiler and Steam Feed Cookers	See Price Current
338	"Stay-on" Cattle Covers	Net